

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 g

2. Edition

En

VA 4/100 H 1100 CR 71  
0 460 304 149

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 6.75  
company IHC  
engine D 239

Pre-stroke setting 0,5 mm ± 0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings		rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1	Timing device travel	800	3,2-4,0 mm		
1.2	Supply pump pressure	800	4,8-5,3 kp/cm <sup>2</sup>		
1.3	Full load delivery without charge-air pressure	700	63,0-64,0 cm <sup>3</sup> /1000 strokes		2,5
	Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4	Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5	Start	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6	Full-load speed regulation	1130	31,0-39,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1	Timing device	rev/min	260-420(230-450)	800 950-1070
		mm	Start (2,9-4,3)	4,7-5,4(4,4-5,7)
2.2	Supply pump	rev/min	200 800	1100
		kp/cm <sup>2</sup>	1,7-2,2(1,5-2,4) (4,6-5,5)	5,9-6,4(5,7-6,6)
	Overflow delivery	rev/min	500	1100
		cm <sup>3</sup> /10 s	55-100(40-110)	55-100(40-110)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1180-1250 (1160-1270)	0  1130 (30,0-40,0) 1050 (70,0-75,0) 700 (62,5-64,5) 500 (60,5-65,5)	
	Stop	1100	0	
Idle stop	Full	400-450 (380-470) 350	0  (11,0-19,0)	
	Start	100	mind.85,0	
End stop		220-300		

Testoil-ISO 4113

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 40 + 15^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

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A 2.

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 IHC 3,5 b 1

4. Edition

VA 4/100 H 1250 CR 8-1 (P)  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 2.78  
company IHC  
engine D 206

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,5-3,3 mm		
1.2 Supply pump pressure	800	5,2-5,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	62,5-63,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	22,0-28,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	Start 300-450 600 800 1000 1100-1250 1,1-1,6(0,8-1,9)(2,2-3,6)3,6-4,6(3,3-4,9)4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 800 1250 1,2-1,7(1,0-1,9) (5,0-5,9)6,8-7,3(6,6-7,5)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 1250 55-100(40-110) 55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1320-1380 (1300-1400) 1300 1230-1260 1200 800 500	0  Start 62,5-65,5 61,5-66,5 (62,0-64,0) 54,0-57,0 (53,0-58,0)	
	Stop			
Idle stop	Full	480-550 (460-570) 400	0  (21,0-29,0)	
	Start	100	mind.85,0	
End stop		220-300		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump = 3,6 mm Dimension IV = 25,0 mm

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

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WPP 001/4 IHC 3,5 1

4. Edition

VA 4/100 H 1150 CR 8-3

supersedes 7.79

company

IHC

engine

D 206

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Nozzle-and-holder assembly 1 688 901 020 (172+3 bar)

Pre-stroke setting 0,5 mm ± 0,02 (± 0 04)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Instructions and Test Equipment VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,7-4,7 mm		
1.2 Supply pump pressure	900	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	65,0-66,0 cm <sup>3</sup> /1000 strokes		2,5.
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	36,0-44,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

2. Test Specifications			Checking values in brackets	
2.1 Timing device	rev/min mm	400-530(370-560) Start	600 1,0-2,0(0,7-2,3) (3,4-5,0)	900 1050-1160 5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,9-2,4(1,7-2,6)		900 1150 (5,2-6,1) 6,2-6,7(6,0-6,9)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)		1150 55-100(40-110)
2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1250-1300 (1230-1320)	0	
		1200 1130-1160 1100 800 500	(35,0-45,0) Start 61,0-64,0 (60,0-65,0) (64,5-66,5) 64,0-67,0 (63,0-68,0)	
Idle stop	Full	1150	0	
		450-500 (430-520)	0	
		400 100 220-320	(11,0-19,0) mind.90,0	

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AS

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math> AB FD 926 15 <math>\pm 4^\circ</math></p> <p><math>\beta = 36 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,60 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

En

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WPP 001/4 IHC 3,5 b 2

3. Edition

VA 4/100 H 1090 CR 8-2  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 12.77  
company IHC  
engine D 206

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Tester.  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,04

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,7-4,7 mm		
1.2 Supply pump pressure	800	5,2-5,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	60,5-61,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1150	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	100-230(70-260)	800	900	930-1070
	mm	Start (3,4-5,0)	4,2-5,2(3,9-5,5)	4,7-5,4(4,4-5,7)	
2.2 Supply pump	rev/min	200	800		1090
	kp/cm <sup>2</sup>	2,2-2,7(2,0-2,9)	(5,0-5,9)		6,4-6,9(6,2-7,1)
Overflow delivery	rev/min	500			1090
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1170-1200 (1150-1240) 1150 1100-1120 1050 800 500	0  Start 61,5-64,5 1090	(25,0-35,0) (60,5-65,5) (60,0-62,0) (51,5-56,5) 0
	Stop			
Idle stop	Full	450-500 (430-520) 400	0  (8,0-16,0)	
	Start	100	mind.90,0	
End stop		220-320		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump = 25 ± 4°</p> <p>α = 40 ± 8°</p> <p>γ = 30 - 8°</p> <p>δ = 60 ± 8°</p>	<p>Pump</p> <p>Dimension IV = 1,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

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En

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# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 2,4 c 1

2. Edition

supersedes 11.73  
company IHC  
engine D 155-Crawler 500 C

VA 3/100 H 1250 CR 9-1 (P)

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,3 mm ± 0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,1-4,1 mm		
1.2 Supply pump pressure	900	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	63,5-64,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	320-450(290-480)	600	900	1100-1250
	Start	1,3-2,3(1,0-2,6)	(2,8-4,4)	5,2-5,9(4,9-6,2)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200		900	1250
		1,2-1,7(1,0-1,9)		(4,8-5,7) 6,5-7,0(6,3-7,2)	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500			1250
		55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1410 (1340-1430)	0	
		1300	(35,0-45,0)	
		1250-1270	Start	
		1220	61,0-64,0 (60,0-65,0)	
		800	(63,0-65,0)	
		500	54,5-57,5 (53,5-58,5)	
	Stop	1250	0	
Idle stop	Full	340-400 (320-420)	0	
		300	(8,5-16,5)	
	Start	100	mind.90,0	
End stop		220-320		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump = 3,0 mm</p> <p>Dimension IV = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 3,5 e

2. Edition

En

VA 4/100 H 1150 CR 12-10

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 8.73  
company IHC  
engine D 206

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,5 mm ± 0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings		rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel		800	2,5-3,5 mm		
1.2 Supply pump pressure		800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure		800	61,5-62,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure		--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation		370	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar		100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation		1230	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	350-520(320-550)	600	800	1020-1150
	mm	Start 0,9-1,9(0,6-2,2)	(2,2-3,8)	4,7-5,4(4,4-5,7)	
2.2 Supply pump	rev/min	200		800	1150
	kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)		(4,3-5,2)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500			1150
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1250-1310 (1230-1330) 1230 1150-1170 1200 800	0  Start 66,0-69,0 (65,0-70,0) (61,0-63,0)	(20,0-30,0)
	Stop	1150	0	
Idle stop	Full	420-500 (400-520) 370	0  (11,0-19,0)	
End stop	Start	100 220-300	mind.90,0	

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

## Fuel Injection Pump

**46**

WPP 001/4 IHC 5,8 p 1

3. Edition

VA 6/100 H 1150 CR 191-1  
CR 191-1 P  
0 460 306 238

supersedes  
comply,  
engine

IHC  
D-358/280

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,4 mm  $\pm$  0,02 ( $\pm$  0,04)  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	4,0-4,8 mm		
1.2 Supply pump pressure	900	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	71,5-72,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	450	8,0-14,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	29,0-35,0 cm <sup>3</sup> /1000 strokes		

### 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	--	600	900 970-1050
		Start	0,8-1,8(0,5-2,1)(3,7-5,1)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	900	1150
		1,9-2,4(1,7-2,6)	(5,2-6,1)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1150
		55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1230-1280 (1210-1300)	0	
		1200	(28,0-36,0)	
		1100	68,5-71,5 (67,5-72,5)	
		800	(71,0-73,0)	
		500	72,0-75,0 (71,0-76,0)	
	Stop	1150	0	
Idle stop	Full	480-530 (460-550)	0	
		450	(7,0-15,0)	
End stop	Start	100	mind.70,0	
		250-360		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,40 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 2,3a 5

1. Edition

En

VA 4/110 H 1200 CL 136-2  
0 460 314 021

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes

company Fiat  
engine 8045-02

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,7-4,5 mm		
1.2 Supply pump pressure	800	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	57,5-58,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind.130,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	200-350(170-380)	800	1100-1230
		Start	(3,4-4,8)	6,1-6,7(5,8-7,0)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	800	1200
		1,6-2,1(1,4-2,3)	(5,1-6,0)	6,8-7,3(6,6-7,5)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1320-1400 (1300-1420)	0	
		1250	(35,0-45,0)	
		1180	54,5-57,5 (53,5-58,5)	
		800	(57,0-59,0)	
		500	53,5-56,5 (52,5-57,5)	
	Stop	1200	0	
Idle stop	Full	390-410 (370-430)	0	
		300	(16,0-24,0)	
	Start	100	mind.130,0	
End stop		110-230		

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ANS

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 35 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension $\text{W}$ 3,0 mm Dimension $\text{L}$ 24,6 mm

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

## Fuel Injection Pump

46

WPP 001/4 IHC 5,8 r

2. Edition

En

VA 6/11 H 1250 CR 404  
CR 404 P

0 460 315 036

Setting of the pointer at a stroke  
of 1 mm in relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,5 mm  $\pm 0,02$  ( $\pm 0,04$ )

Kolbenhub 1,0 mm bezogen auf Auslaß "A"

supersedes 5.79

company IHC  
engine DT 358

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	5,7-6,5 mm		
1.2 Supply pump pressure	900	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	85,5-86,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	14,0-20,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1350	24,0-32,0 cm <sup>3</sup> /1000 strokes		

### 2. Test Specifications

Checking values in brackets

		400	900	1250
2.1 Timing device	rev/min mm	Start 1,3-2,3(1,0-2,6) (5,4-6,8)	(5,4-6,8)	7,0-7,7(6,7-8,0)
		200	900	1250
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,7-2,2(1,5-2,4)	(5,3-6,2)	6,8-7,3(6,6-7,5)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1380-1430 (1360-1450) 1350 1220 800 500	0 84,5-87,5 83,0-87,0	(23,0-33,0) (83,5-88,5) (85,0-87,0) (82,0-88,0)
	Stop	1250	0	
Idle stop	Full	450-500 (430-520) 300	0 (13,0-21,0)	
End stop	Start	100	mind.90,0	

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump = <math>25 \pm 4^\circ</math></p> <p><math>\alpha = 50 \pm 8^\circ</math></p> <p><math>\beta = 30 \pm 8^\circ</math></p> <p><math>\gamma = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,20 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 q 1

1. Edition

En

VA 6/10 H 1250 CR 402  
CR 402 P

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A". Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 5.79  
company IHC  
engine D-358/943

Pre-stroke setting 0,4 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,2-5,0 mm		
1.2 Supply pump pressure	1000	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	72,0-73,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	450	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	-- 500	1000	1250
	mm	Start 1,0-2,0(1,7-2,3)	(3,9-5,3) 5,2-5,9(4,9-6,2)	
2.2 Supply pump	rev/min	200	1000	1250
	kp/cm <sup>2</sup>	1,2-1,7(1,0-1,9)	(4,7-5,6) 5,6-6,1(5,4-6,3)	
Overflow delivery	rev/min	500		1250
	cm <sup>3</sup> /10s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1380 (1310-1400) 1300 1220 1000 500	0 71,5-74,5 71,5-74,5 61,0-64,0	(30,0-40,0) (70,5-75,5) (71,5-73,5) (60,0-65,0)
	Stop	1250	0	
Idle stop	Full	580-650 (560-670) 450	0 (16,0-24,0)	
	Start	100	mind.80,0	
End stop		260-360		

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 - 8^\circ$	Pump Dimension IV = 1,20 mm Dimension V = 24,65 mm

Testoil-ISO 4113

En

A20

A20

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,8 t 1

2. Edition

En

VA 6/10 H 1200 CR 401-2  
CR 401-2 P

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 12.80

company IHC

engine D 358/886 US

0 460 306 254

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	2,3-2,7 mm		
1.2 Supply pump pressure	600	4,1-4,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	74,0-75,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-10,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	36,0-44,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications	Checking values in brackets			
2.1 Timing device	rev/min	-- 500	600	1200
	mm	Start 0,9-1,7(0,6-2,0) (2,0-3,0)	(2,0-3,0)	2,9-3,6(2,6-3,9)
2.2 Supply pump	rev/min	200	600	1200
	kp/cm <sup>2</sup>	1,8-2,3(1,6-2,5)	(3,9-4,8)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1300-1350 (1280-1370)	0	
			1250	(35,0-45,0)	
			1180	(71,0-76,0)	
			900	(73,5-75,5)	
			500	(71,0-76,0)	
	Stop		1200	0	
Idle stop	Full		480-530 (480-550)	0	
			350	(11,0-19,0)	
	Start		100	mind.80,0	
Endanschlag			260-360		

Testoil-ISO 4113

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 0,90 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 q

2. Edition

En

VA 6/10 H 1200 CR 403  
CR 403 P

0 460 306 244

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes  
company  
engine

2.79  
IHC  
D 358/725

Pre-stroke setting 0 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test  
Pump  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,7-5,5 mm		
1.2 Supply pump pressure	1000	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	68,5-69,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	500	13,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	15,0-23,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	600	1000	1200
	mm	Start	1,2-2,2(0,9-2,5)	(4,4-5,8)	5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min		200	1000	1200
	kp/cm <sup>2</sup>		1,8-2,3(1,6-2,5)	(4,5-5,7)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min		500		1200
	cm <sup>3</sup> /10 s		55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1310-1360 (1290-1380)  1300 1150 800 500	0  (14,0-24,0) (69,5-74,5) (68,0-70,0) (65,5-70,5)	
	Stop	1200	0	
Idle stop	Full	590-640 (570-660)  500	0  (12,0-20,0)	
	Start	100	mind.90,0	
End stop		260-360		

Testoil-ISO 4113

A23

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 46 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,80 mm</p> <p>Dimension V = 24,65 mm</p>

Tesioil-ISO 4113

En

A24

A24

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

**46**

WPP 001/4 IHC 5,8 n 1

2. Edition

En

VA 6/10 H 1200 CR 401/1  
0 460 306 252

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 3.81  
company IHC  
engine D-358-786

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0 mm

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	2,3-2,7 mm		
1.2 Supply pump pressure	600	4,2-4,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	68,0-69,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	15,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	500	600	1200
	mm	Start	0,9-1,7(0,6-2,0)	(2,0-3,0)	2,9-3,6(2,6-3,9)
2.2 Supply pump	rev/min		200	600	1200
	kp/cm <sup>2</sup>		1,9-2,4(1,7-2,2)		(4,0-4,9) 6,3-6,8(6,1-7,0)
Overflow delivery	rev/min		500		1200
	cm <sup>3</sup> /10 s		55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1290-1340 (1270-1360)	0	
		1250	(35,0-45,0)	
		1180	62,0-65,0 (61,0-66,0)	
		900	(67,5-69,5)	
		500	65,5-68,5 (64,5-69,5)	
	Stop	1200	0	
Idle stop	Full	520-580 (500-600)	0	
		350	(14,0-22,0)	
		100	mind.80,0	
End stop	Start	260-360		

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B1

Angle to the stop-plate	Pre-setting dimensions
<p>Pump = <math>25 \pm 4^\circ</math> <math>\alpha = 40 \pm 8^\circ</math> <math>\beta = 30 - 8^\circ</math> <math>\gamma = 60 + 8^\circ</math></p>	<p>Pump Dimension IV = 1,00 mm Dimension V = 24,65 mm</p>

Testoil-ISO 4113

B2

En

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# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,1 a

3. Edition

En

VA 6/100 H 1000 CR 199  
CR 199 P

Nozzle-and-holder assembly  
1 688 901 020 (172+3 bar)

supersedes  
company  
engine

6.79  
IHC  
D 310

0 460 306 233

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	750	2,8-3,6 mm		
1.2 Supply pump pressure	750	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	67,0-68,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	19,0-25,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1070	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	550	750	1000
	mm	Start	0,9-1,7(0,6-2,0)	(2,5-3,9)	5,1-5,8(4,8-6,1)
2.2 Supply pump	rev/min		200	750	1000
	kp/cm <sup>2</sup>		1,4-1,9(1,2-2,1)	(2,6-3,8)	5,8-6,2(5,6-6,4)
Overflow delivery	rev/min		500		1000
	cm <sup>3</sup> /10 s		55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1090-1140 (1070-1160)	0	
		1070	64,2-66,8 (30,0-40,0)	
		950	64,2-66,8 (63,2-67,8)	
		800	64,2-66,8 (66,5-68,5)	
		500	65,0-68,0 (64,0-69,0)	
	Stop	1000	0	
Idle stop	Full	350	0 (18,0-26,0)	
End stop	Start	100 260-360	mind.75,0	

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 32 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,70 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

B4

En

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# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,1 q

2. Edition

VA 6/100 H 1200 CR 198  
CR 198 P Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes  
company  
engine

10.78  
IHC  
D 310

0 460 306 231

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	650	2,7-3,5 mm		
1.2 Supply pump pressure	650	4,1-4,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	68,0-69,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	380	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	450	650	800
	mm	Start	0,8-1,6(0,5-1,9)	2,7-3,5(2,4-3,8)	3,4-4,1(3,1-4,4)
2.2 Supply pump	rev/min		200	650	1200
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)		(3,9-4,8)	6,2-8,7(6,0-6,9)
Overflow delivery	rev/min		500		1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1300-1350 (1280-1370)	0	
		1250	(35,0-45,0)	
		1150	64,0-67,0 (63,0-68,0)	
		800	(67,5-69,5)	
		500	69,0-72,0 (68,0-73,0)	
	Stop	1200	0	
Idle stop	Full	400-450 (380-470)	0	
		380	(11,0-19,0)	
		100	mind.75,0	
End stop	Start	260-360		

B5

B5

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 48 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,20 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

**46**

WPP 001/4 IHC 5,1 q 1

4. Edition

En

VA 6/100 H 1200 CR 196  
CR 196 P  
0 460 306 228

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 12.79  
company IHC  
engine D 310

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,7-5,7 mm		
1.2 Supply pump pressure	800	4,2-4,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	62,5-63,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	450	13,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1270	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	120-270(90-300)	400	800	1000-1150
	mm	Start	2,3-3,3(2,0-3,6)	(4,4-6,0)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200		800	1200
	kp/cm <sup>2</sup>	2,0-2,5(1,8-2,7)		(4,0-4,9)	5,3-5,8(5,1-6,0)
Overflow delivery	rev/min	500			1200
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1280-1320 (1260-1340) 1270 1220-1250 1150 800 500	0 Start 63,5-66,5 57,5-60,5	(20,0-30,0) (62,5-67,5) (62,0-64,0) (56,5-61,5)
	Stop	1200	0	
Idle stop	Full	530-590 (510-610) 450	0	(12,0-20,0)
End stop	Start	100 260-360	mind.75,0	

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 0,60 mm</p> <p>Dimension V = 24,65 mm</p>

**Testoil-ISO 4113**

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 2,3 d

3. Edition  
En

VA 3/100 H 1200 CR 193  
0 460 303 151

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 5.77  
company Steyr  
engine WD 308.45

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,2-4,2 mm		
1.2 Supply pump pressure	1000	5,2-5,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	62,0-63,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1280	34,0-42,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	450-600(420-630)	700	1000	1050-1200
	mm	Start	1,0-2,0(0,7-2,3)(2,9-4,5)4,3-5,0(4,0-5,3)		
2.2 Supply pump	rev/min	200		1000	1200
	kp/cm <sup>2</sup>	1,6-2,1(1,4-2,3)		(5,0-5,9) 5,9-6,4(5,7-6,6)	
Overflow delivery	rev/min	500			1200
	cm <sup>3</sup> /10s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1340-1390 (1320-1410) 1280 1220-1250 1200 900 500	0  Start 35,0-43,0  67,0-69,0 (61,0-63,5) 58,5-61,5 (66,0-70,0) (57,5-62,5)	
	Stop	1200	0	
Idle stop	Full	360-410 (340-430) 300	0  (8,5-16,5)	
	Start	100 120-220	mind.70,0	
End stop				

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,20 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

B10

En

310

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 2,9 c 1

3. Edition

En

VA 3/100 H 1200 CR 61

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 7.73  
company IHC  
engine D 179 WW 40 H 9

Pre-stroke setting 0,3 mm ± 0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,7-4,7 mm		
1.2 Supply pump pressure	800	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	70,0-71,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	375	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	Start 250-400(220-430) 1,3-2,3(1,0-2,6)	500	800	1000	1050-1200
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,8-2,3(1,6-2,5)		800		1200
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)		(4,6-5,5)		6,3-6,8(6,1-7,0)
						1200 55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1340-1400 (1320-1420) 1300 1220-1240 1180 800 500	0  Start 72,0-75,0 (71,0-76,0) (69,5-71,5) 64,5-67,5 (63,5-68,5)	(25,0-35,0)
	Stop	1200	0	
Idle stop	Full	440-520 (420-540) 375	0  (11,0-19,0)	
	Start	100	mind.90,0	
End stop		220-300		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension JV = 1,6 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

B12

En

B12

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 IHC 3,9 e

2. Edition

En

VA 4/100 H 1150 CR 69-3  
0 460 304 224

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes  
company  
engine

10.74  
IHC  
D 239

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,7-4,7 mm		
1.2 Supply pump pressure	800	6,0-6,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	64,5-65,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	31,0-39,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets			
2.1 Timing device	rev/min mm	170-300(140-330)	400	800	930-1080
		Start	0,9-1,9(0,6-2,2)	(3,4-5,0)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200		800	1150
		3,2-3,7(3,0-3,9)		(5,8-6,7)	7,3-7,8(7,1-8,0)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500			1150
		55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1230-1280 (1210-1300) 1200 1150-1170 1100 800 500	0  Start 68,5-71,5 60,5-63,5	(30,0-40,0) (67,5-72,5) (64,0-66,0) (59,5-64,5)
	Stop		1150	0	
Idle stop	Full		450-500 (430-520) 400	0	(6,0-14,0)
	Start		100	mind.90,0	
End stop			220-320		

**Testoil-ISO 4113**

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 3,0 mm Dimension V = 24,6 mm

Testoil-ISO 4113

B14

En

314

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3.9 d 5

1. Edition

En

VA 4/100 H 1150 CR 69-1  
0 460 304 178

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes

company:

IHC

engine

D 239-S 824

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	2,1-2,9 mm		
1.2 Supply pump pressure	700	4,2-4,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	73,0-74,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	41,0-49,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	300-450(270-480) Start 1,0-2,0(0,7-2,3) (1,8-3,2)	500 4,7-5,4(4,4-5,7)	700 950-1100
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,5-2,0(1,3-2,2)		700 1150
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)	(4,0-4,9) 6,0-6,5(5,8-6,7)	1150 55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1230-1280 (1210-1300) 1200 1150-1180 1120 800 500	0  Start 73,5-76,5 (72,5-77,5) 72,5-74,5 65,5-68,5 (64,5-69,5)	
	Stop	1150	0	
Idle stop	Full	410-460 (390-480) 350	0  (11,0-19,0)	
	Start	100	mind.90,0	
End stop		220-300		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 4^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,8 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

B16

En

316

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,1 f

2. Edition

En

VA 6/100 H 1350 BR 49  
0 460 306 077

supersedes  
company  
engine

10.69  
IHC  
D 310/36

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,5 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	6,8-7,8 mm		
1.2 Supply pump pressure	700	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	68,5-69,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	17 - 23 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1430	46,0-54,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	300-450(270-480) Start	700 (6,5-8,1)	1080-1230 13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2) 500	700 (4,9-5,8) 1000	1350 7,4-7,9 (7,2-8,1)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	mind.25	55-100(40-110)	

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1500-1550 (1480-1570)	0	
			1430	(45 - 55)	
			1330	(62 - 67)	
			1000	(68 - 70)	
			500	56-59 (55 - 60)	
	Stop		1350	0	
Idle stop	Full		450-540 (460-560)	0	
			350	( 16 - 24)	
End stop	Start		100	mind. 80,0	
			mind.200		

Testoil-ISO 4113

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 \pm 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,0 mm BMP 161/32</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 DEE 2,5 d

3. Edition

En

VA 3/100 H 1250 BR 26 Z  
0 460 303 050

supersedes 1.68  
company John Deere  
engine 44 B

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	7,8-8,8	mm	
1.2 Supply pump pressure	800	5,0-5,5	kp/cm <sup>2</sup>	
1.3 Full-load delivery without charge-air pressure	1100	70,0-71,0	cm <sup>3</sup> /1000 strokes	2,5
Full-load delivery with charge-air pressure	--	--	cm <sup>3</sup> /1000 strokes	
1.4 Idle speed regulation	400	9,0-15,0	cm <sup>3</sup> /1000 strokes	3,0
1.5 Start	--	--	cm <sup>3</sup> /1000 strokes	
1.6 Full-load speed regulation	1300	38,0-46,0	cm <sup>3</sup> /1000 strokes	

Testoil-ISO 4113

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	160-330(130-360)	800	1030-1180
	mm	Start	(7,5-9,1)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	200	800	1250
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(4,8-5,7)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind.25	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1460 (1340-1480)	0 max. 3,0 1300 1200 1100 500 100	(37,0-47,0) (65,0-70,0) (69,5-71,5) (57,0-63,0)
	Stop	1250	0	
Idle stop	Full	520-580 (500-600)	0 (8,0-16,0)	
	Start	400	--	

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha</math> = <math>25 \pm 4^\circ</math></p> <p><math>\beta</math> = <math>44 \pm 8^\circ</math></p> <p><math>\gamma</math> = <math>30 - 8^\circ</math></p> <p><math>\delta</math> = <math>60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,5 mm</p> <p>Dimension V = - mm</p> <p>Dimension I = 7,0 mm</p> <p>Dimension II = 12,0 mm</p> <p>Dimension III = 28,3 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 c

3. Edition

En

VA 6/110 H 1250 BR 47  
0 460 316 006

supersedes 3.72  
company IHC  
engine D 358 TC

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	8,3-9,1 mm	0 bar	
1.2 Supply pump pressure	800	4,9-5,4 kp/cm <sup>2</sup>	0 bar	
1.3 Full-load delivery without charge-air pressure	800	77,0-80,0 cm <sup>3</sup> /1000 strokes	0 bar	2,5
Full-load delivery with charge-air pressure	800	88,5-89,5 cm <sup>3</sup> /1000 strokes	0,43 bar	
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes	0 bar	3,0
1.5 Start	100	mind.100 cm <sup>3</sup> /1000 strokes	0 bar	
1.6 Full-load speed regulation	1350	21,0-29,0 cm <sup>3</sup> /1000 strokes	0,46 bar	

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-450(270-480)	800	1100-1250
	mm	Start	(8,0-9,4)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1250
	kP/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(4,7-5,6)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500		1250
	cm <sup>3</sup> /10 s	55-125(40-140)		55-125(40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1390-1440 (1370-1460) 1350 1250-1280 1200 800 500	0 (20,0-30,0) Start 89,0-92,0 (88,0-93,0) (88,0-90,0) 74,0-77,0 (73,0-78,0)	0,46 bar 0,46 bar 0,46 bar 0,46 bar 0,46 bar 0,43 bar 0,10 bar
	Stop	1250	0	
Idle stop	Full	400-450 (380-470) 300	0 (16,0-24,0)	
	Start	100 mind.180	mind.100	
End stop				

B21

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Angle to the stop plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,5 mm bis FD 130</p> <p>Dimension V = - mm</p> <p>Dimension IV = 1,0 mm ab FD 131</p>

Testoil-ISO 4113

LDA

Start of timing advance 65 - 85 mm Hg  
 End of timing advance 280 - 320 mm Hg

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,1 d

3. Edition

VA 6/100 H 1200 BR 14  
0 460 306 040

supersedes 12.70  
company IHC  
engine D 310

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm  
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,1-7,1 mm		
1.2 Supply pump pressure	1000	6,3-6,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	60,0-61,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.95,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-550 (370-580)	1000	1010-1120
	mm	Start	(5,8-7,4)	6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min	100	1000	1200
	kp/cm <sup>2</sup>	2,2-2,7(2,0-2,9)	(5,9-7,3)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500	1000	1200
	cm <sup>3</sup> /10 s	--	55-125(40-140)	55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1380 (1310-1400) 1300 1180 800 500	0 (20,0-30,0) 63,0-66,0 (62,0-67,0) (59,5-61,5) 54,5-57,5 (53,5-58,5)	
	Stop	1200	0	
Idle stop	Full	340-400 (320-420) 300	0 (8,5-16,5)	
	Start	100 500	mind.95,0 max. 47,5	
End stop		mind.95		

Testoil-ISO 4113

B23

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 2,5 mm Dimension V = - mm

Testoil-ISO 4113

En

B24

324

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IND 2,7 a 1

2. Edition

En

VA 6/100 H 2000 BR 126

0 460 306 097

Start-of-delivery setting for  
plunger lift 0.72 mm referenced to  
outlet "B" at 13.5° before TDC cyl.  
no.6

supersedes 1.68

company Volvo-Penta/Peugeot  
engine Peugeot XDP 618

Nozzle-and-holder assembly  
1-688 901 020 (172 + 3 bar)

Pre-stroke setting 0,6 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1300	8,0-9,0 mm		
1 2 Supply pump pressure	1300	5,1-5,6 kp/cm <sup>2</sup>		
1 3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	1200 --	36,0-37,0 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1 4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		
1 5 Start	100	mind.40,0 cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation	2150	14,0-20,0 cm <sup>3</sup> /1000 strokes		3,0

## 2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min mm	550-710(520-740)	1300	1730-1920
		Start	(7,7-9,3)	13,7-14,4(13,4-14,7)
2 2 Supply pump	rev/min kp/cm <sup>2</sup>	100	1300	2000
		0,2-0,7(0 -0,9)	(4,9-5,8)	6,9-7,4(6,7-7,6)
Overflow delivery	rev/min cm <sup>3</sup> /10s	500		2000
		mind.25		55-100(40-110)

### 2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	2200-2300 (2180-2320) 2150 2000 1200 500	0 33,0-36,0 (32,0-37,0) (35,5-37,5) 21,0-25,0 (20,0-26,0)	
	Stop	2000	0	
Idle stop	Full	380-450 (360-470) 300	0 (6,0-14,0)	
	Start	100	mind.40,0	
End stop		300-550		

Testoil-ISO 4113

C1

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C1

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 42 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p> <p>Dimension I = 7,0 mm</p> <p>Dimension II = 14,0 mm</p> <p>Dimension III = 35,2 mm</p>

Testoil-ISO 4113

C2

En

c2

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 MWM 2,5 a

2. Edition

En

VA 3/100 H 1150 BR 65  
0 460 303 098

supersedes 6.70  
company MWM  
engine D 925-3

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,4 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	6,2-7,2 mm		
1.2 Supply pump pressure	800	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	900 --	60,0-61,0 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	250	10,0-16,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	22,0-28,0 cm <sup>3</sup> /1000 strokes		3,0

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	300-450(270-480) Start	800 (5,9-7,5) 8,7-9,4 (8,4-9,7)	930-1050
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100 1,7-2,2(1,5-2,4)	800 (4,9-5,8) 6,1-6,6(5,9-6,8)	1150
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 mind. 25	1000 55-125(40-140)	

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1230-1330 (1210-1350) 1200 1130 900 500	0  58,5-61,5 53,0-56,0	(21,0-29,0) (57,5-62,5) (59,5-61,5) (52,0-57,0)
	Stop		1150	0	
Idle stop	Full		360-420 (340-440) 250	0  (9,0-17,0)	
	Start		100 500 mind.150	mind.80,0 30,0-54,0	(29,0-55,0)
End stop					

Testoil-ISO 4113

C3

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C3

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump = 0,4 mm</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

C4

En

C4

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,8 d 1

2. Edition

En

VA 6/100 H 1200 CR 21-4

Setting in accordance with WPP 161/4, 1st.

Supplement plunger lift 1.0 mm

referenced to outlet "A".

Nozzle-and-holder assembly

1 688 901 020 (172 + 3 bar)

supersedes 11.73  
company IHC  
engine D 358-866 Mexiko

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0 mm

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,0-5,0 mm		
1.2 Supply pump pressure	800	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	68,5-69,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	15,0-23,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	250-350(220-380)	400	800	1000-1150
	mm	Start 1,3-2,3(1,0-2,6)	(3,7-5,3)	5,2-5,9(4,9-6,2)	
2.2 Supply pump	rev/min	200		800	1200
	kp/cm <sup>2</sup>	2,0-2,5(1,8-2,7)		(4,5-5,4)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500			1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)	

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1370 (1310-1390) 1300 1230-1250 1150 800 500	0  Start 70,5-73,5 (69,5-74,5) (68,0-70,0) 65,5-68,5 (64,5-69,5)	(14,0-24,0)
	Stop	1200	0	
Idle stop	Full	400-460 (380-480) 300	0  (11,0-19,0)	
End stop	Start	100 220-300	mind.90,0	

C5

C5

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 4,00 mm Dimension V = 24,65 mm

Testoil-ISO 4113

C6

En

c6  
rl

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 IHC 5,1 c 3

3. Edition

En

VA 6/100 H 1050 CR 21-3

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes  
company  
engine

10.76  
IHC  
D 310 8/71

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,3 mm

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings		rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel		800	2,0-3,0 mm		
1.2 Supply pump pressure		800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure		800	60,0-61,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure		---	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation		500	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar		100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation		1120	11,0-19,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	500-620(470-650)	650	800	920-1050
	mm	Start 0,5-1,5(0,2-1,8)(1,7-3,3)3,4-4,1(3,1-4,4)			
2.2 Supply pump	rev/min	200		800	1050
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)		(4,3-5,2) 5,5-6,0(5,3-6,2)	
Overflow delivery	rev/min	500			1050
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1150-1200 (1130-1220)	0	
		1120	(10,0-20,0)	
		1020	60,0-63,0 (59,0-64,0)	
		800	(59,5-61,5)	
		500	56,5-59,5 (55,5-60,5)	
	Stop	1050	0	
Idle stop	Full	600-660 (580-680)	0	
		500	(16,0-24,0)	
End stop	Start	100 220-300	mind.85,0	

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C7

C7

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

C8

En

c8

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 3,5 g

3. Edition

VA 4/100 H 1250 CR 12-13  
CR 12-16

supersedes 8.77  
company IHC  
engine D 239

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm  $\pm$  0,04  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	5,0-6,0 mm		
1.2 Supply pump pressure	800	5,6-6,1 kp/cm <sup>2</sup>		2,5
1.3 Full-load delivery without charge-air pressure	800	67,5-68,5 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	14,5-20,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1320	31,0-39,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	190-330(160-360)	400	800	990-1130
	Start	1,2-2,2(0,9-2,5)	(4,7-6,3)	7,0-7,7(6,7-8,0)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200		800	1250
		2,5-3,0(2,3-3,2)		(5,4-6,3)	7,1-7,6(6,9-7,8)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500			1250
		55-100(40-110)			55-100(40-110)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1350-1400 (1330-1420) 1320 1260-1290 1200 800 500	0  Start 73,0-76,0 (72,0-77,0) (67,0-69,0) 63,0-66,0 (62,0-67,0)	
	Stop	1250	0	
Idle stop	Full	450-500 (430-520) 350	0  (13,5-21,5)	
	Start	100 220-300	mind. 90,0	
End stop				

Angle to the stop-plate	Pre-setting dimensions
Pump = $25 \pm 4^\circ$ $\alpha = 40 \pm 8^\circ$ $\beta = 30 - 8^\circ$ $\gamma = 60 \pm 8^\circ$	Pump Dimension IV = 3,60 mm Dimension V = 24,65 mm

Testoil-ISO 4113

C10

En

C10

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 3,5 e 2

1. Edition

En

VA 4/100 H 1200 CR 12-12

supersedes

company

IHC

engine

D 239

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,5 mm  $\pm$  0,04

Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,2-4,2 mm		
1.2 Supply pump pressure	800	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	70,0-71,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	24,0-32,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	220-370(190-400)	500	800	1000-1150
	mm	Start 1,3-2,3(1,0-2,6)	(2,9-4,5)	4,7-5,4(4,4-5,7)	
2.2 Supply pump	rev/min	200		800	1200
	kp/cm <sup>2</sup>	1,9-2,4(1,7-2,6)		(4,7-5,6) 6,3-6,8(6,1-7,0)	
Overflow delivery	rev/min	500			1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)	

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1350-1400 (1330-1420) 1300 1200-1240 1180 800 500	0  Start 73,0-76,0 (72,0-77,0) 66,0-69,0 (69,5-71,5)	
	Stop	1200	0	
Idle stop	Full	470-550 (450-570) 350	0  (11,0-19,0)	
	Start	100	mind.90,0	
End stop		220-300		

C11

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C11

Angle to the stop-plate	Pre-setting dimensions
<p>Pump = <math>25 \pm 4^\circ</math> <math>\alpha = 40 \pm 8^\circ</math> <math>\beta = 30 - 8^\circ</math> <math>\gamma = 60 \pm 8^\circ</math></p>	<p>Pump Dimension I = 1,8 mm Dimension V = 24,6 mm</p>

Testoil-ISO 4113

C12

En

C12

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

**46**

WPP 001/4 IHC 3,9 m

2. Edition

En

VA 4/100 H 1100 CR 12-6

supersedes 6.78  
company IHC  
engine D 239-544

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm  $\pm 0,02$  ( $\pm 0,04$ )  
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	3,7-4,7 mm		
1.2 Supply pump pressure	600	4,3-4,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1050	65,5-66,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1150	42,0-50,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	120-270(90-300)	300	600	850-1030
	Start	1,0-1,3(0,7-1,6)	(3,4-5,0)	6,1-6,8(5,8-7,1)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200		600	1100
		1,9-2,4(1,7-2,6)		(4,1-5,0)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500			1100
		55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1200-1270 (1180-1290) 1150 1120-1140 1050 900 500	0  Start 64,0-66,0 60,5-63,5	(41,0-51,0) (65,0-67,0) (63,0-67,0) (62,0-68,0)
	Stop	1100	0	
Idle stop	Full	390-450 (370-470) 350 100	0   mind.85,0	(11,0-19,0)
End stop	Start	220-300		

**Testoil-ISO 4113**

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,00 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,8 i

2. Edition

VA 6/100 H 1250 CR 94  
0 460 306 210

supersedes 3.77  
company IHC  
engine D 358

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	2,4-3,4 mm		
1.2 Supply pump pressure	700	3,7-4,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	67,5-68,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	15,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-430(270-460)	500	700	750-900
	mm	Start	0,8-1,8(0,5-2,1)	(2,1-3,7)	3,4-4,1(3,1-4,4)
2.2 Supply pump	rev/min	200		700	1250
	kp/cm <sup>2</sup>	1,2-1,7(1,0-1,9)		(3,5-4,4)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min		500		1250
	cm <sup>3</sup> /10 s		55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1370-1420 (1350-1440) 1300 1230-1250 1200 800 500	0  Start 61,0-64,0(60,0-65,0) (67,0-69,0) 69,0-72,0(68,0-73,0)	
	Stop	1250	0	
Idle stop	Full	560-620 (540-640) 400	0  (14,0-22,0)	
	Start	100	mind.80,0	
End stop		220-320		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 0,6 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 4,4 a

4. Edition

En

VA 4/110 H 1150 CR 92  
0 460 314 027

supersedes

company

engine

Setting in accordance with WPP 161/4, 1st.

Supplement plunger lift 1.0 mm  
referenced to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0 mm

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	5,1-6,1 mm		
1.2 Supply pump pressure	900	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	78,5-79,5 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.130,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets			
2.1 Timing device	rev/min mm	300-430(270-460)	600	900	930-1080
		Start	1,9-2,9(1,6-3,2) (4,8-6,4)	6,1-6,8(5,8-7,1)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200		900	1150
		1,9-2,4(1,7-2,6)		(5,1-6,0)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500			1150
		55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1250-1300 (1230-1320) 1200 1100 800 500	0 81,0-84,0 75,5-78,5	(35,0-45,0), (80,0-85,0) (78,0-80,0) (74,5-79,5)
	Stop	1150	0	
Idle stop	Full	420-480 (400-500) 350	0 (11,0-19,0)	
	Start	100	mind.130,0	
End stop		220-320		

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C17

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,1 m

4. Edition

En

VA 6/100 H 1250 CR 91  
0 460 306 206

supersedes 11.77  
company IHC  
engine D 310

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	750	2,3-3,1 mm		
1.2 Supply pump pressure	750	3,7-4,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	64,5-65,5 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1330	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets			
2.1 Timing device	rev/min mm	430-560(400-590) Start	600 0,7-1,7(0,4-2,0) (2,0-3,4)	750 (2,0-3,4) 3,4-4,1(3,1-4,4)	800-950
2.2 Supply pump	rev/min kp/cm <sup>2</sup>		200	750 (3,5-4,4) 5,7-6,2(5,5-6,4)	1250
Overflow delivery	rev/min cm <sup>3</sup> /10 s	1,1-1,6(0,9-1,8)	500	1250	
			55-100(40-110)	55-100(40-110)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1370-1420 (1350-1440) 1330 1260-1280 1230 800 500	0  Start 60,0-63,0 (59,0-64,0) (64,0-66,0) 61,5-64,5 (60,5-65,5)	
	Stop	1250	0	
Idle stop	Full	300-380 (310-400) 300	0  (11,0-19,0)	
End stop	Start	100 220-320	mind.80,0	

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

**46**

WPP 001/4 IHC 5,8 n

2. Edition

En

VA 4/110 H 1200 CR 85-1  
0 460 314 036

supersedes 6.78  
company IHC  
engine D 246

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,4 mm ± 0,02 (± 0,04)  
Plunger lift of 1,0 mm related to outlet "A"

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,2-5,0 mm		
1.2 Supply pump pressure	800	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	73,0-74,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.110,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1220	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	350-480(330-510)	500	800	830-980
	Start	0,7-1,7(0,4-2,1)	(3,9-5,3)	5,2-5,9(4,9-6,2)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200		800	1200
		1,8-2,3(1,6-2,5)		(4,7-5,6)	6,4-6,9(6,2-7,1)
Overflow delivery	rev/min cm <sup>3</sup> /10 s		500		1200
			55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1260-1310 (1240-1330) 1220 1150-1170 1100 800 500	0  Start 76,0-79,0 800 64,5-67,5	(35,0-45,0)  (75,0-80,0) (72,5-74,5) (63,5-68,5)
	Stop	1200	0	
Idle stop	Full	360-410 (340-430) 300	0  Start mind.110,0	(8,0-16,0)
	Start	100		
End stop		220-340		

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c21

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump = 3,00 mm</p> <p>Dimension IV = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,1 c 1

2. Edition

En

VA 6/100 H 1150 CR 79  
0 460 306 191

supersedes 3.76

company IHC

engine D 310

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches

and Testers

Test Instructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,4 mm ± 0,04  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,2-4,2 mm		
1.2 Supply pump pressure	800	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	59,5-60,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1220	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-430(270-460)	500	800	1030-1150
	mm	Start 0,9-1,9(0,6-2,2)	(2,9-4,5)5,2-5,9(4,9-6,2)		
2.2 Supply pump	rev/min	200		800	1150
	kp/cm <sup>2</sup>	2,2-2,7(2,0-2,9)		(5,1-6,0)	6,6-7,1(6,4-7,3)
Overflow delivery	rev/min	500			1150
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1240-1300 (1220-1320) 1220 1170-1190 1130 800 500	0  Start 55,5-58,5 55,5-58,5 (54,5-59,5) (59,0-61,0) 50,5-53,5 (49,5-54,5)	
	Stop	1150	0	
Idle stop	Full	360-420 (340-440) 300	0  (10,0-18,0)	
	Start	100	mind.85,0	
End stop		220-320		

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV Dimension V

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

## Fuel Injection Pump

46

WPP 001/4 MWM 2,5 b

2. Edition

En

VA 3/100 H 1150 CR 86  
0 460 303 148

supersedes 12.74  
company MWM  
engine D 925-3 L

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,2 mm ± 0,02 (± 0,04)

Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,2-3,2 mm		
1.2 Supply pump pressure	800	5,2-5,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	56,5-57,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1180	26,0-34,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	390-520(360-550)	600	800	1050-1200
	mm	Start 0,8-1,8(0,5-2,1)(1,9-3,5)	4,3-5,0(4,0-5,3)		
2.2 Supply pump	rev/min	200	800	1150	
	kp/cm <sup>2</sup>	2,5-3,0(2,3-3,2)	(5,0-5,9)	6,2-6,7(6,0-6,9)	
Overflow delivery	rev/min	500		1150	
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1190-1230 (1170-1250) 1180 1150-1170 1120 900 500	0 Start 53,5-56,5 53,0-56,0	(25,0-35,0) (52,5-57,5) (56,0-58,0) (52,0-57,0)
	Stop	1150	0	
Idle stop	Full	280-370 (260-390) 250	0	(11,0-19,0)
	Start	100 150-250	mind.80,0	
End stop				

D1

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 5,0 mm Dimension V = 24,6 mm

Testoil-ISO 4113

D2

En

D2

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 d 3

1. Edition

En

VA 6/100 H 1150 CR 21-5  
Setting in accordance with WPP 161/4, 1st.  
Supplement plunger lift 1.0 mm  
referenced to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes

company

IHC  
D 310

engine

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0 mm

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,2-3,2 mm		
1.2 Supply pump pressure	800	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	59,5-60,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1220	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	450-570(420-600) Start 200	650 (0,6-1,6(0,3-1,9)(1,9-3,5))	800 5,2-5,9(4,9-6,2)	1050-1160 1150
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,7-2,2(1,3-2,4)	(4,4-5,3)	5,8-6,3(5,6-6,5)	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1150	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1250-1260 (1230-1280) 1220 1150-1170 1130 800 500	0  Start 58,0-61,0 51,5-54,5	(25,0-35,0) (57,0-62,0) (59,0-61,0) (50,5-55,5)
	Stop	1150	0	
Idle stop	Full	370-420 (350-440) 350	0  (6,0-14,0)	
	Start	100	mind.90,0	
End stop		220-300		

D3

D3

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 50 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump = 4,0 mm Dimension IV = 26,0 mm

Testoil-ISO 4113

D4

En

D4

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 3,9 n

2. Edition

VA 4/100 H 1050 CR 12-4

supersedes  
company  
engine

6.78  
IHC  
D 359

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,9-4,9 mm		
1.2 Supply pump pressure	800	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	72,5-73,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	15,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1100	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets					
2.1 Timing device	rev/min	300-450(270-480)	600	800	880-1030
	mm	Start	2,1-3,1(1,8-3,4)	(72,2-73,8)5,2-5,9(4,9-6,2)	
2.2 Supply pump	rev/min	200		800	1050
	kp/cm <sup>2</sup>	2,6-3,1(2,4-3,3)		(4,6-5,5) 5,8-6,3(5,6-6,5)	
Overflow delivery	rev/min	500			1050
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1140-1200 (1120-1220) 1100 1050-1070 1030 800 500	0  Start 71,0-74,0 69,5-72,5	(30,0-40,0)  (70,0-75,0) (72,0-74,0) (68,5-73,5)
	Stop	1050	0	
Idle stop	Full	410-480 (390-500) 350	0	(14,0-22,0)
	Start	100	mind.85,0	
End stop		220-320		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,00 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

D6

En

26

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

**46**

WPP 001/4 IHC 5,1 h 1

1. Edition

En

VA 6/100 H 1250 CR 80  
0 460 306 157

supersedes  
company      IHC  
engine      D 310

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,7 mm ± 0,04

Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,0-4,8 mm		
1.2 Supply pump pressure	1000	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	700	60,0-61,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	450	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	16,0-24,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	400-540(370-570) Start	1000 (3,7-5,1)	1100-1250 5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,2-1,7(1,0-1,9)	1000 (4,8-5,7)	1250 5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s			

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1320-1390 (1300-1410)	0 1300 1200 700 500 66,0-69,0 56,0-59,0	(15,0-25,0) (65,0-70,0) (60,0-62,0) (55,0-60,0)
	Stop	1250	0	
Idle stop	Full	570-630 (550-650)	0	(8,0-16,0)
	Start	450 100 220-300	mind.90,0	
End stop				

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 1,5 mm</p> <p>Dimension V = 24,6 mm</p>

**Testoil-ISO 4113**

**D8**

En

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 4,4 d 1

1. Edition

VA 4/11 H 1250 CR 93-2  
0 460 314 045

supersedes

company

IHC

engine

D 268/510

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,0-7,0 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	82,0-83,0 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	400	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 95,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1330	34,0-42,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	500	1000	1250
	mm	0,8-1,8(0,6-2,0)	(5,7-7,3)	7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min	200	1000	1250
	kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)	(5,3-6,2)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500		1250
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1400-1450 (1380-1470)  1330 1200 800 500	0  82,5-85,5 (33,0-43,0) (81,5-86,5) (81,5-83,5) 76,5-79,5 (75,5-80,5)	
	Stop	1250	0	
Idle stop	Full	470-520 (450-540) 400	0  (11,0-19,0)	
	Start	100	mind. 95,0	
End stop		220-340		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 36 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump = - mm Dimension IV = - mm Dimension V = - mm

Testoil-ISO 4113

D10

En

D10

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 IHC 5,8 e 3

1. Edition

En

VA 6/100 H 1250 CR 83  
0 460 306 166

supersedes  
company  
engine

IHC  
D 358

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,4 mm  $\pm$  0,04  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,9-3,9 mm		
1.2 Supply pump pressure	800	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	72,0-73,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	450	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	21,0-29,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	500 0,6-1,6(0,3-1,9)	800 (2,6-4,2)	1100 4,4-5,4(4,1-5,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,6-2,1(1,4-2,3)	800 (4,4-5,3)	1250 6,1-6,6(5,9-6,8)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)		1250 55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1330-1380 (1310-1400) 1300 1240-1300 1220 1000 500	0  Start 71,5-74,5 1000 61,5-64,5	(20,0-30,0)  (70,5-75,5) (71,5-73,5) (60,5-65,5)
		Stop	1250	0	
Idle stop	Full		650-750 (630-770) 450	0    mind.85,0	(16,0-24,0)
		Start	100		
End stop			220-300		

**Testoil-ISO 4113**

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

D12

En

D12

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 u 2

2. Edition

EN

VA 6/10 H 1050 CR 413  
CR 413 P  
0 460 306 256

supersedes 10.81  
company IHC  
engine D 358/923

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,3 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,1-4,9 mm		
1.2 Supply pump pressure	800	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	70,0-71,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	450	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1090	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	Checking values in brackets		
		--	500	800
Start	0,8-1,8(0,5-2,1) (3,8-5,2)	(3,8-5,2)	5,2-5,9(4,9-6,2)	1050
	200	800		1050
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,9-2,4(1,7-2,6)	(4,8-5,7)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1050
		55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1120-1180 (1100-1200) 1090 1050-1070 1000 800 500	0  Start 71,75-74,25 (70,75-75,25) (70,0-72,0) 69,5-73,5 (68,5-74,5)	(35,0-45,0)
	Stop	1050	0	
Idle stop	Full	550-630 (530-650) 450	0  (16,0-24,0)	
	Start	100	mind. 70,0	
End stop		260-360		

D13

D13

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,2 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

D14

En

D14

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 2,9 d

3. Edition

En

VA 3/100 H 1090 CR 43-3

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 4.79  
company IHC  
engine D 155

Pre-stroke setting 0,3 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	4,6-5,4 mm		
1.2 Supply pump pressure	900	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	72,5-73,5 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	---	cm <sup>3</sup> /1000 strokes	2,5
1.4 Idle speed regulation	400	14,0-20,0 cm <sup>3</sup> /1000 strokes		
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1150	36,0-44,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	500 1,5-2,5(1,2-2,8)	900 (4,4-5,6)	1090 5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,5-2,0(1,3-2,2)	900 (4,5-5,4)	1090 5,4-5,9(5,2-6,1)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)		1090 55-100(40-110)

2.3 Fuel deliveries	Speed control lever:	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1190-1250 (1170-1270) 1150 1050 800 500	0 (35,0-45,0) (74,7-79,3) (72,0-74,0) 70,5-73,5 (69,5-74,5)	
		Stop	1090	0	
Idle stop	Full		480-550 (460-570) 400	0 (13,0-21,0)	
		Start	100 220-340	mind.90,0	
End stop					

D15

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 48 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension IV = 1,60 mm Dimension V = 24,65 mm

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 I-C 5,1 b 1

2. Edition

En

VA 6/100 H 1100 CR 37

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 4.73  
company IHC  
engine D 310

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,04

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	2,6-3,4 mm		
1.2 Supply pump pressure	700	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	59,0-60,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.95,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1150	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications Checking values in brackets

2.1 Timing device	rev/min	320-420(290-450)	700	900-
	mm	Start	(2,3-3,7)	5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min	100	700	1100
	kp/cm <sup>2</sup>	0,8-1,8(0,6-2,0)	(5,2-6,1)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1100
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1200-1270 (1180-1290)	0  1150 (35,0-45,0) 1050 62,5-65,5 (61,5-66,5) 800 (58,0-61,0) 500 57,5-60,5 (56,5-61,5)	
	Stop	100	mind.95,0	
Idle stop	Full	370-420 (350-440)	0  (6,0-14,0)	
	Start	300  100 220-300	mind.95,0	
End stop				

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017

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 4,5 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46  
WPP 001/4 IHC 5,8 e 2

1. Edition

VA 6/100 H 1050 CR 81  
0 460 306 162

supersedes  
company  
engine

IHC  
D 358

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm  $\pm$  0,04  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,7-4,7 mm		
1.2 Supply pump pressure	800	6,0-6,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	700	69,5-70,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1130	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	250-400(220-430)	800	950-1070
		Start	(3,4-5,0)	5,1-5,8(4,8-6,1)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 2,5-3,0(2,3-3,2)	800 (5,8-6,7)	1050 6,9-7,4(6,7-7,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)		1050 55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1160-1220 (1140-1240) 1130 1000 700 500	0 (25,0-35,0) 70,0-73,0 (69,0-74,0) (69,0-71,0) 65,0-68,0 (64,0-69,0)	
	Stop	1050	0	
Idle stop	Full	480-550 (460-570) 350	0 (6,0-14,0)	
	Start	100	mind.85,0	
End stop		220-300		

D19

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV= 4,5 mm</p> <p>Dimension V= 24,6 mm</p>

Testoil-ISO 4113

D20

En

320

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 4,0 a

3. Edition

En

VA 4/90 H 1200 CR 144-2  
0 460 394 042

supersedes 4.80  
company Steyr  
engine WD 411.41

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,9-4,7 mm		
1.2 Supply pump pressure	1000	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	55,5-57,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	13,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1280	23,0-31,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets				
2.1 Timing device	rev/min	700	1000	1200
	mm	0,8-1,8(0,5-2,1)	(3,6-5,0)	5,8-6,6(5,5-6,9)
2.2 Supply pump	rev/min	200	1000	1200
	kp/cm <sup>2</sup>	1,2-1,7(1,0-1,9)	(4,9-5,8)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1380 (1310-1400) 1280 1150 900 500	0 (22,0-32,0) 59,5-60,5 (59,0-61,0) (54,5-58,5) 48,5-51,5 (47,5-52,5)	
	Stop	1200	0	
Idle stop	Full	420-470 (400-490) 300	0 (12,0-20,0)	
End stop	Start	100 150-250	mind.70,0	

D21

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D21

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension IV = 4,60 mm Dimension V = 24,65 mm

Testoil-ISO 4113

D22

En

D22

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 4,0 c

2. Edition

En

VA 4/100 H 1200 CR 145-3  
0 460 304 235

supersedes 3.77  
company Steyr  
engine WD 412.41

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,8-7,6 mm		
1.2 Supply pump pressure	1000	5,0-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	1230 --	80,0-81,0 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1320	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	300-450(270-480)	1000	1130-1270
		Start	(6,5-7,9)	8,9-9,6(8,6-9,9)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1000	1200
		1,3-1,8(1,1-2,0)	(4,8-5,7)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1200
		55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1410 (1340-1430) 1320 1260-1290 1230 900 500	0  Start  79,0-81,0 (78,0-82,0) 77,5-80,5 (76,5-81,5)	
	Stop	1200	0	
Idle stop	Full	360-410 (340-430) 300	0  (9,0-17,0)	
	Start	100	mind. 80,0	
End stop		120-220		

D23

D23

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = &lt; 68^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,80 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

**46**

WPP 001/4 STE 3,1 a

2. Edition

En

VA 4/100 H 1200 CR 145-4  
0 460 304 237

supersedes 4.77  
company Steyr  
engine WD 408.43

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

**Testoil-ISO 4113**

1. Settings		rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel		1000	3,4-4,2 mm		
1.2 Supply pump pressure		1000	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure		1180	65,0-66,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure		-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation		250	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start		100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation		1270	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	480-630(450-660)	1000	1140-1300
	mm	Start	(3,1-4,5)	5,1-5,8(4,8-6,1)
2.2 Supply pump	rev/min	200	1000	1200
	kp/cm <sup>2</sup>	1,2-1,7(1,0-1,9)	(4,5-5,4)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1320-1370 (1300-1390) 1270 1220-1260 1180 900 500	0  Start  (35,0-45,0)  (64,5-66,5) 69,0-71,0 (68,0-72,0) 62,0-65,0 (61,0-66,0)	
	Stop	1200	0	
Idle stop	Full	330-380 (310-400) 250	0  (11,0-19,0)	
	Start	100	mind. 80,0	
End stop		120-220		

E1

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E1

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,40 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

E2

En

E3

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 4,0 d

3. Edition

En

VA 4/10 H 1200 CR 145-5  
0 460 304 246

superseries 3.80  
company Steyr  
engine WD 411.85

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,7-6,5	mm	
1.2 Supply pump pressure	1000	5,0-5,5	kp/cm <sup>2</sup>	
1.3 Full-load delivery without charge-air pressure	1180	68,0-69,0	cm <sup>3</sup> /1000 strokes	2,5
Full-load delivery with charge-air pressure	--	--	cm <sup>3</sup> /1000 strokes	
1.4 Idle speed regulation	350	10,0-16,0	cm <sup>3</sup> /1000 strokes	3,0
1.5 Start	100	mind.70,0	cm <sup>3</sup> /1000 strokes	
1.6 Full-load speed regulation	1280	31,0-39,0	cm <sup>3</sup> /1000 strokes	

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600	1000	1200
	mm	1,4-2,2(1,1-2,5)	(5,4-6,8)	7,7-8,4(7,3-8,7)
2.2 Supply pump	rev/min	200	1000	1200
	kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	(4,8-5,7)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1380 (1310-1400)	0  1280 1180 1000 500  71,5-73,5 62,5-65,5 (30,0-40,0) (67,5-69,5) (70,5-74,5) (61,5-66,5)	
	Stop	1200	0	
Idle stop	Full	470-530 (450-550)	0  350 100 mind.70,0  (9,0-17,0)	
	Start	120-220		
End stop				

E3

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E3

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 36 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,00 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

E4

En

E4

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 PER 5,8 a

5. Edition

En

VA 6/110 H 1300 CL 179  
0 460 316 017

supersedes 5.76  
company Perkins  
engine T 6 354

Nozzle-and-holder assembly  
1 588 901 020 (172 + 3 bar)

Pre-stroke setting 0,3 mm  $\pm$  0,02 ( $\pm$  0,04)  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	500	4,6-5,2 mm	0	
1.2 Supply pump pressure	500	4,5-5,0 kp/cm <sup>2</sup>	0	
1.3 Full-load delivery without charge-air pressure	500	87,0-88,0 cm <sup>3</sup> /1000 strokes	0	2,5
Full-load delivery with charge-air pressure	900	98,5-99,5 cm <sup>3</sup> /1000 strokes	0,4	
1.4 Idle speed regulation	400	9,5-15,5 cm <sup>3</sup> /1000 strokes	0	3,0
1.5 Start	100	mind.100,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	1450	47,0-53,0 cm <sup>3</sup> /1000 strokes	0,4	

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	Start 140-240(110-270) 1,3-2,3(1,0-2,6)	300	500	650	680-750
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 2,5-3,0(2,3-3,2)		500 (4,3-5,2)		1300 6,8-7,3(6,6-7,5)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)				1300 55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1730-1875 1550 1450 1300 900 750 500	0 max.12,0 47,0-53,0 (46,0-54,0) 102-104 (101-105) (98,0-100,0) mind.96,5 (86,5-88,5)	0,4 0,4 0,4 0,4 0,4 0,4 0
	Stop	1300	0	
Idle stop	Full	500-580 (480-600) 400	0 (8,5-16,5)	
	Start	100	mind.100,0	
End stop		100-200		

E5

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E5

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma</math></p> <p><math>\delta</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 0,6 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

E6

En

E6

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 r

2. Edition

En

VA 4/10 H 1150 CR 69-5  
0 460 304 249

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 7.81  
company IHC  
engine D 239

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,5-4,3 mm		
1.2 Supply pump pressure	800	5,6-6,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	76,5-77,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	18,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1220	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	400	800	1150
	mm	0,6-1,6(0,3-1,9)	(3,2-4,6)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200	800	1150
	kp/cm <sup>2</sup>	2,6-3,1(2,4-3,3)	(5,4-6,3)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1150
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1260-1310 (1240-1330)	0	
		1220	(35,0-45,0)	
		1130	73,5-76,5 (72,5-75,0)	
		800	(76,0-78,0)	
		500	72,5-75,5 (71,5-76,5)	
	Stop	1150	0	
Idle stop	Full	450-500 (430-520)	0	
		350	(17,0-24,0)	
	Start	100	mind.85,0	
End stop		220-340		

E7

E7

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 48 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump = 4,00 mm</p> <p>Dimension IV = 24,65 mm</p>

Testoil-ISO 4113

E8

En

E8

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 IHC 3,9 p

2. Edition

En

VA 4/10 H 1150 CR 69-7  
0 460 304 251

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 7.80  
company IHC  
engine D 239

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings		rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel		800	3,1-3,9 mm		
1.2 Supply pump pressure		800	5,7-6,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure		800	68,0-69,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure		--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation		350	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar		100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation		1220	33,0-41,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	500 1,0-2,0(0,7-2,3)	800 (2,8-4,2)	1150 4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 2,5-3,0(2,3-3,2)	800 (5,5-6,4)	1150 7,2-7,7(7,0-7,9)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)		1150 55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1240-1290 (1220-1310)	0  1220 (32,0-42,0) 1100 (74,5-77,5) 800 (73,5-78,5) 500 (67,5-69,5)	
	Stop	1150	0	
Idle stop	Full	420-470 (400-490)	0  (16,0-24,0)	
	Start	350 100 220-340	mind.90,0	
End stop				

E9

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E5

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 46 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 2,60 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

E10

En

E10

# Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,8 p 2  
3. Edition

46

En

VA 6/100 H 1250 CR 195  
CR 195 P

supersedes  
company IHC  
engine

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,0-5,0 mm		
1.2 Supply pump pressure	800	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	73,0-74,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1330	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	500	1000
	mm	Start	1,0-2,0(0,7-2,3)	(3,7-5,3)
2.2 Supply pump	rev/min	200	800	1250
	kp/cm <sup>2</sup>	1,7-2,2(1,4-2,5)	(4,4-5,3)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500		1250
	cm <sup>3</sup> /10s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1380-1450 (1360-1470) 1330 1260-1280 1220 800 500	0  Start 76,5-79,5 (75,5-80,5) 800 500 68,5-71,5 (67,5-78,5)	2
	Stop	1250	0	
Idle stop	Full	480-550 (460-570) 350	0  (11,0-19,0)	
	Start	100	mind.90,0	
End stop		260-360		

E11

EM

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 3^\circ$	Pump Dimension IV = 2,80 mm Dimension V = 24,65 mm

Testoil-ISO 4113

E12

En

t17

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 4,0a 3

1. Edition

En

VA 4/90 H 1200 CR 164  
0 460 394 010

supersedes  
company Steyr  
engine WD 408.40

Nozzle-and-holder assembly  
i 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,3 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	2,2-3,0 mm		
1.2 Supply pump pressure	900	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	62,0-63,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1280	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	590-700(560-730)	900	920-1050
	mm	Start	(1,9-3,3)	2,9-3,6(2,6-3,9)
2.2 Supply pump	rev/min	200	900	1200
	kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)	(4,6-5,5)	5,6-6,1(5,4-6,3)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1200
		55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1400 (1310-1420) 1280 1230-1250 1200 900 500	0  Start 60,0-62,0 56,0-60,0	(30,0-40,0) (61,5-63,5) (59,0-63,0) (55,0-61,0)
	Stop	1200	0	
Idle stop	Full	400-470 (380-490) 300	0	(9,0-17,0)
	Start	100	mind.75,0	
End stop		130-230		

E13

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump = 3,5 mm Dimension IV = 24,6 mm

Testoil-ISO 4113

E14

En

E14

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 2,4 a 2

1. Edition

En

VA 3/100 H 950 CR 43

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes

company

IHC

engine

D 155

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

Pre-stroke setting 0,3 mm ± 0,04

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	500	2,8-3,6 mm		
1.2 Supply pump pressure	500	4,3-4,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	59,0-60,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1000	33,5-41,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	120-250(90-280)	300	500	800-950
	min	Start	0,8-1,8(0,5-2,1)	(2,5-3,9) 4,7-5,4(4,4-5,7)	
2.2 Supply pump	rev/min	200		500	950
	kp/cm <sup>2</sup>	2,3-2,8(2,1-3,0)		(4,1-5,0) 6,0-6,5(5,8-6,7)	
Overflow delivery	rev/min	500			950
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1040-1090 (1020-1110) 1000 970-990 930 800 500	0  Start 60,5-63,5 (59,5-64,5) 54,5-57,5 (53,5-58,5)	
	Stop	950	0	
Idle stop	Full	430-480 (410-500) 400	0  (8,5-16,5)	
	Start	100	mind.90,0	
End stop		220-300		

E15

E45

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 1,0 mm Dimension V = 24,6 mm

Testoil-ISO 4113

E16

En

E16

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 3,0 a

2. Edition

En

VA 4/90 H 1200 CR 144-1  
G 460 394 035

supersedes 4.77  
company Steyr  
engine WD 408.42

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,7-5,5 mm		
1.2 Supply pump pressure	1000	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1150	57,5-58,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1280	21,0-29,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	470-620(440-650)	1000	1150-1300
	Start	(4,4-5,8)	7,0-7,7(6,7-8,0)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1000	1200
	1,5-2,0(1,3-2,2)	(4,9-5,8)	5,9-6,4(5,7-6,6)	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1200
	55-100(40-110)		55-100(40-110)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1310-1350 (1290-1370) 1280 1210-1240 1150 900 500	0  Start  56,0-58,0 49,0-52,0	(20,0-30,0) (57,0-59,0) (55,0-59,0) (48,0-53,0)
	Stop	1200	0	
Idle stop	Full	340-390 (320-410) 250	0	(11,0-19,0)
	Start	100	mind. 70,0	
End stop		120-220		

E17

E14

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = &lt; 68^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,60 mm.</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

E18

En

E18

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 FIA 2,3 b 1

2. Edition

En

VA 3/110 H 1100 CL 134-3  
0 460 313 013

supersedes  
company  
engine

7.71  
Fiat  
853

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A". Nozzle-and-holder assembly  
1 688 901 520 (172 + 3 bar)

Pre-stroke setting 0,7 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	5,2-6,0 mm		
1.2 Supply pump pressure	800	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	62,5-63,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.120,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1150	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	300-450(270-420) Start	800 (4,9-6,3)	1000-1100 8,0-8,7(7,7-9,0)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,6-2,1(1,4-2,3)	800 (4,7-5,8)	1100 6,3-6,8(6,0-7,1)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)		1100 55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1210-1260 (1190-1280) 1150 1100 800 500	0 (35,0-45,0) 57,5-60,5 (56,5-61,5) (62,0-64,0) 56,0-60,0 (55,0-61,0)	
	Stop	1100	0	
Idle stop	Full	350-400 (330-380) 300	0 (16,0-24,0)	
	Start	100	mind.120,0	
End stop		110-230		

E19

E19

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

E20

En

E20

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 D00 4,8 a

2. Edition

En

VA 6/110 H 1400 CR 166  
0 460 316 014

supersedes 7.73  
company van Doorne  
engine 1475

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02(± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,5-6,5 mm		
1.2 Supply pump pressure	1000	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	53,5-54,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	9,0-15,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.110,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1470	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	270-420(240-450)	1000	1250-1400
	mm	Start	(5,2-6,8)	7,8-8,5(7,5-8,8)
2.2 Supply pump	rev/min	200	1000	1400
	kp/cm <sup>2</sup>	1,6-2,1(1,4-2,3)	(5,1-6,0)	6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500		1400
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1500-1570 (1480-1590)	0  1470 1350 1000 500  1400	(30,0-40,0) (51,5-56,5) (53,0-55,0) (48,5-53,5)  0
Idle stop	Full	270-320 (250-340)	0	(8,0-16,0)
	Start	250  100	mind.110,0	
End stop		110-210		

E21

E21

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump 2,6 mm Dimension IV 24,6 mm

Testoil-ISO 4113

E22

En

E22

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/FIA 2.3 b 2

1. Edition

En

VA 3/100 H 1200 CL 134-4  
0 460 313 014

supersedes

company

Fiat  
853-10

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

• Pre-setting see reverse side

Pre-stroke setting 0,7 mm ± 0,02 (± 0,04) Einstellung des

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	45,5-46,5 mm		
1.2 Supply pump pressure	800	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	66,0-67,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.120,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-450(270-480)	800	1100-1230
	mm	Start	(4,25-4,95)	8,9-9,6(8,6-9,9)
2.2 Supply pump	rev/min	200	800	1200
	kp/cm <sup>2</sup>	1,9-2,4(1,7-2,6)	(4,6-5,5)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		100
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1350-1430 (1330-1410) 1300 1180 800 500	0 (35,0-45,0) 60,5-63,5 (59,5-64,5) (65,5-67,5) 59,0-63,0 (58,0-64,0)	
	Stop	1200	0	
Idle stop	Full	330-390 (310-410) 300	0 (16,0-24,0)	
	Start	100	mind.120,0	
End stop		110-230		

E23

E24

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Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	<b>Pump</b> Dimension IV = 3,5 mm Dimension V = 24,6 mm

Testoil-ISO 4113

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/FIA 2,6 b

3. Edition

VA 3/110 H 1300 CL 134-8 Nozzle-and-holder assembly  
0 460 313 018 1 688 901 020 (172 + 3 bar)

supersedes 6.79  
company Fiat  
engine 8035-02202

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	4,7-5,5 mm		
1.2 Supply pump pressure	900	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	68,5-69,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	21,0-27,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.110,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1400	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	500	900	1100
	mm	1,2-2,2(0,9-2,5)	(4,4-5,8)	6,0-6,7(5,7-7,0)
2.2 Supply pump	rev/min	200	900	1300
	kp/cm <sup>2</sup>	1,7-2,2(1,5-2,4)	(4,4-5,3)	5,7-6,2(5,5-6,4)
Overflow delivery	rev/min	500		1300
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1500-1550 (1480-1570)	0	
		1400	(30,0-40,0)	
		1280	(64,0-69,0)	
		800	(68,0-70,0)	
		500	(59,5-64,5)	
	Stop	1300	0	
Idle stop	Full	420-470 (400-490)	0	
		300	(20,0-28,0)	
	Start	100	mind.110,0	
End stop		110-230		

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F1

F1

Angle to the stop plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension IV = 0,60 mm Dimension V = 29,15 mm

Testoil-ISO 4113

F2

En

f2

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

**46**

WPP 001/4 FIA 2,3 a 1

2. Edition

En

VA 4/110 H 1200 CL 136  
0 460 314 016

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 7.71  
company Fiat  
engine 8045

Pre-stroke setting 0,5 mm ± 0,02(± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,7-4,5 mm		
1.2 Supply pump pressure	800	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	63,0-64,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.130,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1270	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets				
2.1 Timing device	rev/min	220-370(190-400)	800	1100-1230
	mm	Start	(3,4-4,8)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200	800	1200
	kP/cm <sup>2</sup>	1,6-2,1(1,4-2,3)	(5,1-6,0)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1320-1370 (1300-1390)	0	
		1270	(35,0-45,0)	
		1180	60,0-63,0 (60,0-69,0)	
		800	(62,5-64,5)	
		500	59,5-62,5 (58,5-63,5)	
	Stop	1200	0	
Idle stop	Full	300-400 (280-420)	0	
		300	(16,0-24,0)	
	Start	100	mind.130,0	
End stop		110-230		

**F3**

**F3**

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 33 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

F4

En

44

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 2,3 a 4

1. Edition  
En

VA 4/110 H 1100 CL 136-1  
0 460 314 017

supersedes  
company Fiat  
engine 845-010

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm  $\pm$  0,02 ( $\pm$  0,04)  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,7-4,5 mm		
1.2 Supply pump pressure	800	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	59,0-60,0 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.130,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1160	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	220-370(190-400)	800	970-1100)
		Start	(3,4-4,8)	5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1,6-2,1(1,4-2,3)	800 (5,1-6,0)	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)		1100 55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1210-1260 (1190-1280)	0	
		1160	(30,0-40,0)	
		1080	(55,5-60,5)	
		800	(58,5-60,5)	
		400	(53,5-57,5)	
	Stop	1100	0	
Idle stop	Full	390-410 (370-430)	0	
		300	(16,0-24,0)	
End stop	Start	100 110-230	mind.130,0	

F5

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 35 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 2,5 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

F6

En

f6

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,3 c 2  
1. Edition  
En

VA 4/100 H 1150 CR 46

0 460 304 200

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes  
company  
engine

IHC  
D 206

Pre-stroke setting 0,5 mm ± 0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	3,1-4,1 mm		
1.2 Supply pump pressure	800	5,3-5,8 kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	60,0-61,0 cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm³/1000 strokes		
1.4 Idle speed regulation	360	12,0-18,0 cm³/1000 strokes		
1.5 Start 196 bar	100	mind.85,0 cm³/1000 strokes		3,0
1.6 Full-load speed regulation	1220	26,0-34,0 cm³/1000 strokes		

2. Test Specifications		Checking values in brackets	250-400(220-430)	500	800	950-1100
2.1 Timing device	rev/min mm	Start	1,0-2,0(0,7-2,3)(2,8-4,4)4,7-5,4(4,4-5,7)			
		200		800	1150	
2.2 Supply pump	rev/min kp/cm²	2,1-2,6(1,9-2,8)		(5,1-6,0) 6,7-7,3(6,5-7,5)		
Overflow delivery	rev/min cm³/10 s		500		1150	
			55-100(40-110)	55-100(40-110)		

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm³/1000 strokes	Charge-air pressure kp/cm²
End stop	Full		1260-1310 (1240-1330) 1220 1150-1180 1100 800 500	0  Start 61,5-64,5 800 50,0-53,0	(25,0-35,0)  (60,5-65,5) (59,5-61,5) (49,0-54,0)
	Stop		1150	0	
Idle stop	Full		480-500 (460-520) 360	0  (11,0-19,0)	
	Start		100	mind.85,0	
End stop			--		

F7

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F7

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 36 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 3,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

F8

En

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,1 c 2

En 2. Edition

VA 6/100 H 1100 CR 21-6

supersedes 11.75  
company IHC  
engine D 310

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

Pre-Stroke setting 0 mm  
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,0-4,0 mm		
1.2 Supply pump pressure	800	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	65,5-66,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1170	32,0-38,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-520(370-550)	600	800	950-1060
	mm	Start 1,0-2,0(0,7-2,3)	(2,7-4,3)	5,2-5,9(4,9-6,2)	
2.2 Supply pump	rev/min	200		800	1100
	kP/cm <sup>2</sup>	1,7-2,2(1,5-2,4)		(4,6-5,5)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500			1100
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1200-1250 (1180-1270) 1170 1130-1150 1100 800 500	0  Start 59,5-62,5 (58,5-63,5) 57,5-60,5 (65,0-67,0)	(31,0-39,0)
	Stop	1100	0	
Idle stop	Full	520-580 (500-600) 400	0  (11,0-19,0)	
	Start	100	mind.90,0	
End stop		220-320		

F9

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F C

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,4 mm</p> <p>Dimension V = 26,0 mm</p>

Testoil-ISO 4113

F10

En

F10

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 4,4 e

2. Edition

En

VA 4/11 H 1150 CR 412  
0 460 314 043

supersedes 3.81

company IHC

engine D 268/620 W

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	5,2-6,0 mm		
1.2 Supply pump pressure	900	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	78,5-79,5 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.130,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	Checking values in brackets		
		--	600	900
Start		1,8-2,8(1,5-3,1) (4,9-6,3)	6,1-6,8(5,8-7,1)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	900	1150
Overflow delivery	rev/min cm <sup>3</sup> /10 s	1,6-2,1(1,4-2,3) (5,2-6,1)	6,3-6,8(6,1-7,0)	
		500		1150
		55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1220-1270 (1200-1290)  1200 1100 800 500	0  80,5-83,5 75,5-79,5 (35,0-45,0) (79,5-84,5) (78,0-80,0) (74,5-80,5)	
	Stop	1150	0	
Idle stop	Full	420-480 (400-500)  350	0  (11,0-19,0)	
	Start	100	mind.130,0	
End stop		260-360		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = 24,65mm</p>

Testoil-ISO 4113

F12

En

F12

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 q 3

1. Edition  
En

VA 6/11 H 1200 CR 407  
CR 407 P  
0 460 316 039

supersedes  
company IHC  
engine DT 358/130 HP

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,1-5,1 mm		
1.2 Supply pump pressure	800	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	90,5-91,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1260	41,0-49,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications	Checking values in brackets			
2.1 Timing device	rev/min mm	-- 500	800	1200
Start	0,7-1,7(0,4-2,0)	(3,8-5,4)	7,0-7,7(6,7-8,0)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	800	1200
1,5-2,1(1,3-2,3)		(4,8-5,7)	6,7-7,2(6,5-7,4)	
Overflow delivery	rev/min cm <sup>3</sup> /10s	500		1200
		55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1320-1370 (1300-1390)	0	
			1260	(40,0-50,0)	
			1180	86,5-89,5 (85,5-90,5)	
			800	(90,0-92,0)	
			500	86,0-89,0 (85,0-90,0)	
	Stop		1200	0	
Idle stop	Full		480-530 (460-550)	0	
			350	(11,0-19,0)	
	Start		100	mind.90,0	
End stop			260-360		

F13

i/3

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump = - mm Dimension IV = 24,65mm

Testoil-ISO 4113

F14

En

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 q 4

1. Edition

En

VA 6/10 H 1200 CR 408  
CR 408 P

supersedes  
company  
engine

IHC  
D 358

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,1-4,9 mm		
1.2 Supply pump pressure	1000	5,7-6,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	73,5-74,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1280	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	Checking values in brackets		
		--	600	1000
Start		1,3-2,3(1,0-2,6)	(3,8-5,2)	5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200	1000	1200
Overflow delivery	rev/min cm <sup>3</sup> /10 s	1,7-2,2(1,4-2,5)	(5,5-6,4)	6,4-6,9(6,2-7,1)
		500		1200
		55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1320-1380 (1300-1400) 1280 1150 800 500	0 76,0-79,0 80,0-83,0 68,5-71,5	(27,0-37,0) (75,0-80,0) (73,0-75,0) (67,5-72,5)
	Stop	1200	0	
Idle stop	Full	500-550 (480-570) 350	0 (11,0-19,0)	
End stop	Start	100 260-360	mind.90,0	

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8.81

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 52 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

F16

En

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 STE 2,6 a

2. Edition

En

VA 3(10 H 1200 CR 411  
0 460 303 158

supersedes 5.80  
company Steyr  
engine WO 311.40

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,5 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,6-6,6 mm		
1.2 Supply pump pressure	1000	5,2-5,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1150	65,5-66,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	36,0-44,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min	--	700	1000
	mm	Start	2,7-3,7(2,4-4,0)	(5,3-6,9)
2.2 Supply pump	rev/min	200	1000	1200
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(5,0-5,9)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1360-1410 (1340-1430)	0	
			1300	(35,0-45,0)	
			1150	(65,0-67,0)	
			1000	68,5-70,5 (67,5-71,5)	
			500	54,5-57,5 (53,5-58,5)	
			1200	0	
Idle stop	Full		380-430 (360-450)	0	
			300	(11,0-19,0)	
			100	mind.70,0	
End stop	Start		120-220		

F17

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10.81

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 44 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,00 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

F18

En

F18

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,1 1

3. Edition

VA 6/100 H 1200 CR 51  
0 460 306 204

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A". Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

En supersedes 12.77  
company IHC  
engine D 310

Pre-stroke setting 0,3 mm ± 0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1000	2,5-3,5 mm		
1 2 Supply pump pressure	1000	5,4-5,9 kp/cm <sup>2</sup>		
1 3 Full-load delivery without charge-air pressure	800	60,0-61,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1 5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation	1250	33,0-41,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets			
2 1 Timing device	rev/min mm	450-600(430-620) Start	700	1000	1050-1200
2 2 Supply pump	rev/min kp/cm <sup>2</sup>	0,7-1,7(0,4-2,0) (2,2-3,8)	(2,2-3,8)	3,4-4,1(3,1-4,4)	
		200	100	1200	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	1,1-1,6(0,9-1,8) 500		(5,2-6,1) 6,2-6,7(6,0-6,9)	
		55-100(40-110)		1200	
				55-100(40-110)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge air pressure kp/cm <sup>2</sup>
End stop	Full	1310-1360 (1290-1380) 1250 1200-1220 1150 800 500	0 Start 61,0-64,0 52,0-55,0	(32,0-42,0) (60,0-65,0) (59,5-61,5) (51,0-56,0)
	Stop	1200	0	
Idle stop	Full	360-410 (340-430) 300	0	(11,0-19,0)
End stop	Start	220-320		

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F10

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,6 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

F20

En

F20

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,1 d 1

3. Edition

En

VA 6/10 H 1200 CR 44-1  
0 460 306 186

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes  
company  
engine

12.79  
IHC  
D 310

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,6-5,6 mm		
1.2 Supply pump pressure	800	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	62,5-63,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	450	13,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1270	21,0-29,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	130-280(100-310)	400	800	1000-1150
	Start	2,2-3,2(1,9-3,5)	(4,3-5,9)	6,1-6,8(5,8-7,1)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200		800	1200
		2,5-3,0(2,3-3,2)		(4,9-5,8)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500			1200
		55-100(40-110)		55-100(40-110)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1280-1320 (1260-1340) 1270 1220-1250 1150 800 500	0  Start 63,5-66,5 (62,5-67,5) (62,0-64,0) 56,5-59,5 (55,5-60,5)	(20,0-30,0)
	Stop	1200	0	
Idle stop	Full	530-590 (520-610) 450	0  (12,0-20,0)	
	Start	100	mind.75,0	
End stop		220-320		

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F21

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,40 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

En

F22

F22

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,1 f 1

2. Edition

EN

VA 6/100 H 1350 CR 49-1  
0 460 306 189

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes  
company  
engine

3.76  
IHC  
D 310

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	4,1-5,1 mm		
1.2 Supply pump pressure	700	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	62,0-63,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	550	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1440	31,0-39,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

2. Test Specifications		Checking values in brackets	150-300(120-330)	350	700	1100-1250
2.1 Timing device	rev/min mm	Start	1,3-2,3(1,0-2,6)(3,8-5,4)	7,0-7,7(6,7-8,0)	700	1350
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200			(5,1-6,0)7,2-7,7(7,0-7,9)	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500				1350
		55-100(40-110)			55-100(40-110)	

2.3 Fuel deliveries						
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>		
End stop	Full	1510-1560 (1490-1580) 1440 1360-1390 1300 800 500	0  Start 63,0-66,0 55,5-58,5	(30,0-40,0)  (62,0-67,0) (61,5-63,5) (54,5-59,5)		
	Stop	1350	0			
Idle stop	Full	600-670 (580-690) 550	0	(8,0-16,0)		
	Start	100	mind.70,0			
End stop		220-320				

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F 23

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 2,60 mm Dimension V = 24,65 mm

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

**46**

WPP 001/4 IHC 2,4 d

2. Edition

En

VA 3/100 H 1025 CR 43-2  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes  
company  
engine

3.77  
IHC  
D 155

Pre-stroke setting 0,3 mm ± 0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	500	2,8-3,6 mm		
1.2 Supply pump pressure	800	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	58,5-59,5 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	400	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1070	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	120-250(90-280) Start	300	500	800-950
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 2,3-2,8(2,1-3,0)	800		1025
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)	5,4-5,9(5,2-6,1)	6,2-6,7(6,0-6,9)	1025
					55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1100-1150 (1080-1170) 1070 1020-1040 1000 800 500	0  Start 57,0-60,0 (56,0-61,0) (58,0-60,0) 51,5-54,5 (50,5-55,5)	
	Stop	1025	0	
Idle stop	Full	430-480 (410-500) 400	0  (6,0-14,0)	
End stop	Start	100 220-320	mind.90,0	

**Testoil-ISO 4113**

G1

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6A

Angle to the stop-plate	Pre-setting dimensions
Pump = $25 \pm 4^\circ$ $\alpha = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 3^\circ$	Pump = 1,6 mm Dimension IV = 24,6 mm Dimension V

Testoil-ISO 4113

G2

En

62

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 IHC 5,8 m 1

2. Edition

En

VA 6/10 H 1100 CR 87-2  
0 460 306 248

supersedes 10.79  
company IHC  
engine D 358

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0 mm

Plunger lift of 1,0 mm related to outlet "A"

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	3,8-4,6 mm		
1.2 Supply pump pressure	700	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	67,5-68,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1150	33,5-41,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400	700	800-950
	mm	0,8-1,8(0,5-2,1)	(3,5-4,9)	5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min	200	700	1100
	kp/cm <sup>2</sup>	2,2-2,7(2,0-2,9)	(4,6-5,5)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500		1100
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1190-1240 (1170-1260)	0	
		1150	(32,5-42,5)	
		1050	(67,0-72,0)	
		800	(67,0-69,0)	
		500	66,0-70,0 (65,0-71,0)	
	Stop	1100	0	
Idle stop	Full	480-530 (460-550)	0	
		400	(8,5-16,5)	
	Start	100	mind.80,0	
End stop		220-320	.	

G3

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump = 3,00 mm Dimension IV = 24,65 mm

Testoil-ISO 4113

G4

En

64

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 IHC 4,4 d

2. Edition

En

VA 4/11 H 1200 CR 93-1  
0 460 314 041

supersedes 6.79  
company IHC  
engine D 268

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)  
Plunger lift of 1,0 mm related to outlet "A"

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	4,8-5,8 mm		
1.2 Supply pump pressure	700	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	77,5-78,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.95,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1280	34,0-42,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400	700	770-920
	mm	1,2-2,2(0,9-2,5)	(4,5-6,1)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200	700	1200
	kp/cm <sup>2</sup>	1,7-2,2(1,5-2,4)	(4,4-5,3)	6,6-7,1(6,4-7,3)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1380 (1310-1400)	0	
		1280	(33,0-43,0)	
		1150	(79,0-84,0)	
		800	(77,0-79,0)	
		500	74,0-77,0 (73,0-78,0)	
	Stop	1200	0	
Idle stop	Full	460-530 (440-550)	0	
		400	(10,0-18,0)	
	Start	100	mind.95,0	
End stop		220-340		

G5

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 36 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,60 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

G6.

En

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,1 k

2. Edition

En

VA 6/100 H 1150 CR 79-1  
0 460 306 222

supersedes 3.77  
company IHC  
engine D 310-X 55

Nozzle-and-holder assembly  
1 638 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,4 mm ± 0,04  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	3,9-4,9 mm		
1.2 Supply pump pressure	1000	5,8-6,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	66,0-67,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	450	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600	1000	1250
	mm	1,3-2,3(1,0-2,6)	(3,6-5,2)	5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min	200	1000	1150
	kp/cm <sup>2</sup>	2,0-2,5(1,8-2,7)	(5,6-6,5)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500		1150
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1300-1350 (1280-1370)	0	
		1250	(30,0-40,0)	
		1120	(64,0-68,0)	
		1000	(65,5-67,5)	
		500	(55,5-60,5)	
	Stop	1150	0	
Idle stop	Full	530-590 (510-610)	0	
		450	(16,0-24,0)	
	Start	100	mind.75,0	
End stop		220-320		

G7

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 35 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump = 4,0 mm</p> <p>Dimension IV = 24,6 mm</p> <p>Dimension V</p>

Testoil-ISO 4113

G8

En

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 IHC 2,9 b 2

1. Edition

supersedes  
company  
engine

IHC  
D 179 tractor 553

VA 3/100 H 1090 CR 11-2  
Setting in accordance with WPP 161/4, 1st.  
Supplement plunger lift 1.0 mm

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

**Testoil-ISO 4113**

Pre-stroke setting 0 mm

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	3,3-4,1 mm		
1.2 Supply pump pressure	700	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	66,5-67,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1150	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	300-450(270-480) 500 700 850-1000		
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	Start 0,8-1,8(0,5-2,1) (3,0-4,4) 5,2-5,9(4,9-6,2) 200 700 1090		
		2,0-2,5(1,8-2,7) (4,3-5,2) 6,0-6,5(5,8-6,7)		
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 1090 55-100(40-110) 55-100(40-110)		

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1180-1250 (1160-1270) 1150 1050 800 500	0 (35,0-45,0) (72,0-77,0) (66,0-68,0) 63,5-66,5 (62,5-67,5)	
	Stop	1090	0	
Idle stop	Full	470-550 (450-570) 400	0 (11,0-19,0)	
End stop	Start	100 220-300	mind.90,0	

G9

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Angle to the stop-plate	Pre-setting dimensions
Pump = $25 \pm 4^\circ$ $\alpha = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump = 4,6 mm Dimension IV Dimension V = 24,6 mm

Testoil-ISO 4113

G10

En

F.1B

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,8 m

2. Edition

En

VA 6/100 H 1100 CR 87-1  
0 460 306 220

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes  
company  
engine

12.77  
IHC  
D 358

Pre-stroke setting 0 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	3,9-4,7 mm		
1.2 Supply pump pressure	700	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	68,5-69,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1150	41,0-49,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400	700	800-950
	mm	0,8-1,8(0,5-2,1)	(3,6-5,0)	5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min	200	700	1100
	kp/cm <sup>2</sup>	2,3-2,8(2,1-3,0)	(4,6-5,5)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500		1100
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1220-1270 (1200-1290) 1150 1080 800 500	0  71,5-73,5 (40,0-50,0) (70,5-74,5)  65,0-68,0 (68,0-70,0) (64,0-69,0)	
	Stop	1100	0	
Idle stop	Full	500-550 (480-570) 400	0  (8,5-16,5)	
	Start	100	mind.80,0	
End stop		220-320		

Testoil-ISO 4113

G11

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,00 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

G12

En

C12

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 GUL 4,7 b 1

1. Edition

En

VA 6/100 H 1000 BR 140-2  
0 460 306 062

supersedes

company Guldner

engine 6 L 79-60 PS

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,1 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	700	6,8-7,8 mm		
1 2 Supply pump pressure	700	4,4-4,9 kp/cm <sup>2</sup>		
1 3 Full-load delivery without charge-air pressure	800	49,5-50,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	250	10,0-16,0 cm <sup>3</sup> /1000 strokes		
1 5 Start	100	mind. 70,0 cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation	1030	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min mm	220-380(190-410)	700	840-980
		Start	(6,5-8,1)	9,7-10,4(9,4-10,7)
2 2 Supply pump	rev/min kp/cm <sup>2</sup>	100	700	1000
		1,0-1,5(0,8-1,7)	(4,2-5,1)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1000
		mind. 25		55-125(40-140)

## 2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1050-1090 (1020-1120) 1030 950 800 500	0 (25,0-35,0) 49,0-51,0 (48,0-52,0) (49,0-51,0) 40,5-43,5 (39,5-44,5)	
	Stop	1000	0	
Idle stop	Full	280-340 (760-360) 250	0 (9,0-17,0)	
	Start	100	mind. 70,0	
End stop		130-230		

G13

G13

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 44 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump = 1,0 mm Dimension IV = - mm Dimension V = - mm

Testoil-ISO 4113

G14

En

614

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 GUL 4,7 b

3. Edition

En

VA 6/100 H 1100 BR 140  
0 460 306 061

supersedes 7.71  
company Guldner  
engine 6 L 79-75 PS

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,1 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	6,1-7,1 mm		
1.2 Supply pump pressure	700	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	54,5-55,5 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	250	10,0-16,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1130	24,0-32,0 cm <sup>3</sup> /1000 strokes		3,0

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	250-400 (220-430)	700	900-1050
	mm	Start	(5,8-7,4)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	700	1100
	kp/cm <sup>2</sup>	1,2-1,7(1,0-1,9)	(4,9-5,8)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1000
		mind. 25		55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1150-1200 (1130-1220) 1130 1050 800 500	0 (23,0-33,0) 54,5-57,5 (53,5-58,5) (54,0-56,0) 46,0-49,0 (45,0-50,0)	
	Stop	1100	0	
Idle stop	Full	300-350 (280-370) 250	0 (9,0-17,0)	
	Start	100	mind. 70,0	
End stop		130-230		

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E05

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,0 mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

G16

En

6/16

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,1 g

2. Edition

En

VA 6/100 H 1200 BR 51

supersedes 12.70  
company IHC  
engine D 310 DU

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,6-6,6 mm		
1.2 Supply pump pressure	1100	6,3-6,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	58,0-59,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	41,0-49,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	560-720(530-750)	1100	1110-1210
	mm	Start	(5,3-6,9)	6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min	100	1100	1200
	kP/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(6,1-7,0)	--
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10s	mind. 25	55-125(40-140)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1340-1390 (1320-1410)	0	
		1250	(40,0-50,0)	
		1150	(59,0-64,0)	
		800	(57,5-59,5)	
		500	(49,5-54,5)	
	Stop	1200	0	
Idle stop	Full	360-410 (340-430)	0	
		300	(11,0-19,0)	
	Start	100	mind. 90,0	
		500	max. 45,0	
End stop				

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G17

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump = 2,0 mm</p> <p>Dimension IV = - mm</p>

Testoil-ISO 4113

G18

En

G18

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 GUL 3,1 a

3. Edition

En

VA 4/100 H 1150 BR 106

supersedes

company

Güldner  
4 L 79

engine

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,1 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	4,5-5,5 mm		
1.2 Supply pump pressure	1150	5,6-6,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	54,0-55,0 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	250	11,0-17,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.100,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1190	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	350-510 (320-540) Start	700 (4,2-5,8)	990-1150 10,7-11,4(10,4-11,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100 0,9-1,4(0,7-1,6)	200 3,9-4,4(3,7-4,6)	1150 (5,4-6,3)
Overflow delivery	rev/min cm <sup>3</sup> /10 s			1000 55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1170-1220 (1150-1240) 1190 1130 800 500	0 56,5-59,5 44,5-47,5	(15,0-25,0) (55,5-60,5) (53,5-55,5) (43,5-48,5)
	Stop	1150	0	
Idle stop	Full	280-330 (260-350) 250	0 (10,0-18,0)	
End stop	Start	100 130-230	mind.100,0	

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679

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p> <p>Dimension I = 7,0 mm</p> <p>Dimension II = 11,0 mm</p> <p>Dimension III = 32,8 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 STE 2,0 a 2

1. Edition

En

VA 2/100 H 1100 BR 156  
0 460 302 005

supersedes  
company Steyr  
engine WD 210.40

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,3 mm

Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	3,8-4,8 mm		
1.2 Supply pump pressure	700	4,1-4,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	61,0-62,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	13,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1170	26,0-34,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	420-530(390-560)	700	960-1060
	mm	Start	(3,5-5,1)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	700	1100
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(3,9-4,8)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind. 25		55-125(40-140)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1230-1290 (1210-1310)  1170 1030 900 450	0  60,5-62,5 57,5-61,5	(25,0-35,0) (59,5-63,5) (60,5-62,5) (56,5-62,5)
	Stop	1100	0	
Idle stop	Full	300-360 (280-380) 250	0  (12,0-20,0)	
End stop	Start	100 110-210	mind. 80,0	

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 35 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension IV = 3,5 mm Dimension V = - mm

Testoil-ISO 4113

G22

En

622

# **Test Specifications Distributor-Type Fuel Injection Pump**

46

WPP 001/4 FIA 3,5 b

3. Edition

Em

VA 4/110 H 1250 CL 136-6  
0 460 314 034

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 11.79  
company Fiat  
engine 8045-04270

Pre-stroke setting 0,5 mm ± 0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-setting see reverse side				
1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,7-5,5 mm		
1.2 Supply pump pressure	1000	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	70,0-73,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure		cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	22,0-28,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 110,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1400	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## **2. Test Specifications**

### Checking values in brackets

2.1 Timing device	rev/min	700	1000	1100-1250
	mm	1,5-2,5(1,2-2,8)	(5,0-6,1)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200	1000	1100-1250
	kP/cm <sup>2</sup>	1,5-2,0(1,3-2,2)	(5,1-6,0)	6,1-6,8(5,9-7,0)
Overflow delivery	rev/min	500		1250
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1460-1510 (1440-1530) 1400 1200 800 500	0     70,5-71,5 62,0-65,0	(25,0-35,0) (69,0-74,0) (70,0-72,0) (61,0-66,0)
	Stop	1250	0	
Idle stop	Full	400-450 (380-470) 300	0   	(21,0-29,0)
	Start	100	mind.110,0	
End stop		110-230		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 35 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension IV = 3,60 mm Dimension V = 24,65 mm

Testoil-ISO 4113

G24.

En

624

# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 STE 2,3 c 3

1. Edition

VA 4/90 H 1200 CR 144  
0 460 394 008

supersedes  
company  
engine

**Steyr**  
**WD 407**

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,3 mm  $\pm$  0,02 ( $\pm$  0,04)  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting sec reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,8-5,8 mm		
1.2 Supply pump pressure	1000	5,2-5,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	51,0-53,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	450-600(420-630)	1000	1140-1240
	mm	Start	(4,5-6,1)	7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min	200	1000	1200
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(5,0-5,9)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1390 (1310-1410)	0  1300 1150 900 500  54,0-55,5 51,0-53,0 51,0-54,5  1200	(15,0-25,0) (53,0-56,5) (50,5-53,5) (50,0-55,5)  0
Idle stop	Full	390-440 (370-460)	0	
	Start	300		(6,0-14,0)
End stop	Start	100	mind.75,0	
	End stop	150-250		

H1

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

H2

En

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

En

46

WPP 001/4 STE 2,3 c 1

2. Edition

VA 3/90 H 1200 CR 143  
0 460 393 006

supersedes 7.71  
company Steyr  
engine WD 307

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,5-6,4 mm		
1.2 Supply pump pressure	1000	5,2-5,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	53,5-54,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (autom.)	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	13,0-21,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-550(370-580)	1000	1120-1240
	mm	Start	(5,2-6,7)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200	1000	1200
	kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)	(5,0-5,9)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1310-1410 (1320-1430)	0	
		1300	(12,0-22,0)	
		1200	(53,0-55,0)	
		800	51,0-54,0	(50,0-55,0)
		500	54,0-57,0	(53,0-58,0)
	Stop	1200	0	
Idle stop	Full	400-460 (380-480)	0	
		300	(11,0-19,0)	
	Start	100	mind.70,0	
End stop		130-230	.	

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

H4

En

H4

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

**46**

WPP 001/4 IHC 3,9 d 1

2. Edition

En

VA 4/100 H 1250 CR 60 Ensemble injecteur/porte-injecteur  
0 460 304 102 1 688 901 020 (172 + 3 bar)

supersedes  
company  
engine

Réglage de l'index pour une course de piston de  
1 mm et rapporté à la sortie "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,04

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	4,5-5,5 mm		
1.2 Supply pump pressure	900	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	71,5-72,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	19,5-25,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	Checking values in brackets			
		200-350(170-380)	500	900	1130-1250
	Début	1,7-2,7(1,4-3,0)	(4,2-5,8)	7,0-7,7(6,7-8,0)	
	200		900		1250
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,9-2,4(1,7-2,6)		(4,8-5,7)	6,3-6,8(6,1-7,0)
	500				1250
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1310-1360 (1290-1380) 1300 1260-1280 1200 900 500	0  Début 71,0-74,0 66,5-69,5	(30,0-40,0)  (70,0-75,0) (71,0-73,0) (65,5-70,5)
	Stop	1250	0	
Idle stop	Full	410-480 (390-500) 300 100 220-300	0  mind.90,0	(18,5-26,5)
Butée de fin de course	Start			

H5

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1415

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 45 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,5 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

H6

En

H6

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 2,4 a 1

3. Edition

En

VA 3/100 H 950 CR 9  
CR 9-2 1 688 901 020 (172 + 3 bar)

supersedes 7.73  
company IHC  
engine D 155 tractor  
E-423

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ( $\pm 0,04$ )

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	3,3-4,1 mm		
1.2 Supply pump pressure	600	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	64,5-65,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,5
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1000	33,4-41,4 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	120-250(90-280) Start 200	300	600	800-950
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	2,3-2,8(2,1-3,0)	(0,8-1,8(0,5-2,1)(3,0-4,4))	4,7-5,4(4,4-5,7)	600 950
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500	(4,6-5,5)	6,3-6,8(6,1-7,0)	950

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1050-1100 (1030-1120) 1000 960-980 930 800 500	0  Start 65,5-68,5 56,5-59,5	(32,4-42,4) (64,5-69,5) (64,0-66,0) (55,5-60,5)
	Stop	950	0	
Idle stop	Full	400-460 (380-480) 350	0  (11,0-19,0)	
	Start	100	mind.90,0	
End stop		220-300		

H7

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,0 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

H8

En

HP

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 d 6

1. Edition

En

VA 4/100 H 1100 CR 69-2  
0 460 304 172

Setting in accordance with WPP 161/4, 1st.  
Supplement plunger lift 1.0 mm  
referenced to outlet "A".

supersedes  
company      IHC  
engine      D 239-724

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0 mm

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press. kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	3,1-3,9 mm		
1.2 Supply pump pressure	700	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	66,0-67,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1180	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	250-400(220-430) Start	700	900-1050
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	2,2-2,7(2,0-2,9) 500	(2,8-4,2) 700 (4,8-5,7)	4,7-5,4(4,4-5,7) 1100
Overflow delivery	rev/min cm <sup>3</sup> /10 s	55-100(40-110)		6,5-7,0(6,3-7,2) 1100
				55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1210-1270 (1190-1290) 1180 1080 800 500	0 69,5-72,5 63,0-65,0	(25,0-35,0) (68,5-73,5) (65,5-67,5) (62,0-66,0)
	Stop	1100	0	
Idle stop	Full	410-470 (390-490) 350	0 (11,0-19,0)	
	Start	100	mind.90,0	
End stop		220-300		

H9

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H9

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump = 2,0 mm Dimension IV = 24,6 mm

Testoil-ISO 4113

H10

En

110

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 p

3. Edition

En

VA 6/110 H 1150 CR 180-4 Nozzle-and-holder assembly  
CR 180-4 P 1 688 901 020 (172 + 3 bar)

0 460 316 032

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 5.79  
company IHC  
engine DT 358/3980B/3984B

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	5,4-6,4 mm	0	
1.2 Supply pump pressure	800	4,9-5,4 kp/cm <sup>2</sup>	0	
1.3 Full-load delivery without charge-air pressure	500	77,0-80,0 cm <sup>3</sup> /1000 strokes	0,1	2,5
Full-load delivery with charge-air pressure	800	92,5-93,5 cm <sup>3</sup> /1000 strokes	0,5	
1.4 Idle speed regulation	700	7,0-13,0 cm <sup>3</sup> /1000 strokes	0	3,0
1.5 Start	100	mind.100,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	1200	41,0-49,0 cm <sup>3</sup> /1000 strokes	0,5	

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	130-280(100-310)	400	800	980-1130
	mm	Start	1,8-2,8(1,5-3,1)(5,1-6,7)	6,9-7,6(6,6-7,9)	
2.2 Supply pump	rev/min	200		800	1150
	kp/cm <sup>2</sup>	1,8-2,3(1,6-2,5)		(4,7-5,6)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500			1150
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1250-1320 (1230-1340) 1200 1130-1160 1100 1000 800 500	0  Start 85,0-88,0 85,0-87,0  0	0,5  0,5 (40,0-50,0) (84,0-89,0) (84,0-88,0) (92,0-94,0) (76,0-81,0)  0,1
	Stop	1150	0	
Idle stop	Full	760-810 (740-830) 700	0  (6,0-14,0)	
	Start	100	mind.100,0	
End stop		260-360		

H11

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Angle to the stop-plate	Pre-setting dimensions
Pump = $25 \pm 4^\circ$ $\alpha = 35 \pm 8^\circ$ $\beta$ $\gamma$ $\delta$	Pump Dimension IV = 0,60 mm Dimension V = 24,65 mm

Testoil-ISO 4113

H12

En

H12

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 a

3. Edition

VA 6/110 H 1250 CR 180-3 Nozzle-and-holder assembly  
0 460 316 030 1 688 901 020 (172 + 3 bar)  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 5.79  
company IHC  
engine DT 358/3990

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	5,4-6,4 mm	0	
1.2 Supply pump pressure	800	4,9-5,4 kp/cm <sup>2</sup>	0	
1.3 Full-load delivery without charge-air pressure	500	75,0-78,0 cm <sup>3</sup> /1000 strokes	0,1	2,5
Full-load delivery with charge-air pressure	800	90,5-91,5 cm <sup>3</sup> /1000 strokes	0,5	
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes	0	3,0
1.5 Start	100	mind.100,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	1310	41,0-49,0 cm <sup>3</sup> /1000 strokes	0,5	

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	150-300(120-330)	400	800	980-1130
	mm	Start	2,0-4,0(1,7-4,3)	(5,1-6,7) 6,9-7,6(6,6-7,9)	
2.2 Supply pump	rev/min	200		800	1250
	kp/cm <sup>2</sup>	1,8-2,3(1,6-2,5)		(4,7-5,6) 6,5-7,0(6,3-7,2)	
Overflow delivery	rev/min	500			1250
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1350-1420 (1330-1440) 1310 1240-1270 1200 1000 800 500	0  Start 88,0-91,0 90,0-92,0  0	0,5  (40,0-50,0) 0,5  0,5 0,5 0,5 0
	Stop	1250	0	
Idle stop	Full	480-530 (460-550) 350	0  (11,0-19,0)	
	Start	100	mind. 100,0	
End stop		220-320		

H13

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1/13

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma</math></p> <p><math>\delta</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 0,60 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

H14

En

114

# **Test Specifications Distributor-Type Fuel Injection Pump**

46

WPP 001/4 IHC 5,8 g 2  
1. Edition

VA 6/110 H 1100 CR 180-2  
0 460 316 022

supersedes  
company  
engine

IHC  
DT 358

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 ( $\pm 0,04$ )

Plunger lift of 1,0 mm related to outlet "A"

<b>1. Settings</b>	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm
1.1 Timing device travel	800	5,7-6,7 mm	0	
1.2 Supply pump pressure	800	4,8-5,3 kp/cm <sup>2</sup>	0	
1.3 Full-load delivery without charge-air pressure	500	78,5-81,5 cm <sup>3</sup> /1000 strokes	0,2	
Full-load delivery with charge-air pressure	800	85,5-86,5 cm <sup>3</sup> /1000 strokes	0,4	2,5
1.4 Idle speed regulation	450	14,5-20,5 cm <sup>3</sup> /1000 strokes	0	3,0
1.5 Start	100	mind. 95,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	1180	41,0-49,0 cm <sup>3</sup> /1000 strokes	0,4	

## **2. Test Specifications**

2. Test Specifications		Checking values in brackets			
2.1 Timing device	rev/min	200-350(170-380)	400	800	900-1050
	mm	Start	1,0-2,0(0,7-2,3)	(5,4-7,0)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200		800	1100
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)		(4,6-5,5)	6,0-6,4(5,8-6,6)
Overflow delivery	rev/min	500			1100
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1210-1280 (1190-1300)	0	0,4
		1180	(40,0-50,0)	0,4
		1100-1130	Start	
		1050	86,5-89,5	(85,5-90,5)
		800		(85,0-87,0)
		500		(77,5-82,5)
	Stop	1100	0	
Idle stop	Full	530-580 (510-600)	0	
		450		(13,5-21,5)
	Start	100	mind.95,0	
End stop		220-320		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma</math></p> <p><math>\delta</math></p>	<p>Pump</p> <p>Dimension IV = 0,60 mm</p> <p>Dimension V = 24,60 mm</p>

Testoil-ISO 4113

H16

En

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 9

5. Edition

En

VA 6/110 H 1250 CR 180  
CR 180 P Nozzle-and-holder assembly  
0 460 316 013/016 1 688 901 020 (172 + 3 bar)

supersedes 4.79  
company IHC  
engine DT 358 H 65 C

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	5,4-6,4 mm	0	
1.2 Supply pump pressure	800	4,9-5,4 kp/cm²	0	
1.3 Full-load delivery without charge-air pressure	500	75,0-78,0 cm³/1000 strokes	0,1	2,5
Full-load delivery with charge-air pressure	800	90,5-91,5 cm³/1000 strokes	0,6	
1.4 Idle speed regulation	350	12,0-18,0 cm³/1000 strokes	0	3,0
1.5 Start	100	mind.100,0 cm³/1000 strokes	0	
1.6 Full-load speed regulation	1310	41,0-49,0 cm³/1000 strokes	0,6	

## 2. Test Specifications

2.1 Timing device	rev/min mm	Checking values in brackets			
		150-300(120-330)	400	800	980-1130
	Start	2,0-3,0(1,7-3,3)	(5,1-6,7)	6,9-7,6(6,6-7,9)	
	200		800		1250
2.2 Supply pump	rev/min kp/cm²	1,8-2,3(1,6-2,5)		(4,7-5,6)	6,5-7,0(6,3-7,2)
	500				1250
Overflow delivery	rev/min cm³/10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes	Charge-air pressure kp/cm²
End stop	Full	1350-1420 1310 1200 1000 800 500	0 41,0-49,0 88,0-91,0 90,0-92,0 (90,0-92,0) (74,5-78,5)	0,6 0,6 0,6 0,6 0,6 0,1
	Stop	1250	0	
Idle stop	Full	480-530 (450-560) 350	0 (11,0-19,0)	
	Start	100	mind.100,0	
End stop		220-320		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma$ $\delta$	Pump = 0,6 mm Dimension IV Dimension V = 24,6 mm

**Testoil-ISO 4113**

**H18**

**En**

*11/18*

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 FIA 5,2 c

3. Edition

En

VA 6/11 H 1275 CR 185-3  
0 460 316 041  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes  
company  
engine

4.80  
Fiat  
8065.04.217

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

**Testoil-ISO 4113**

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,8-6,6 mm		
1.2 Supply pump pressure	1000	5,7-6,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	74,0-75,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.120,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1400	38,0-46,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	--	Checking values in brackets		
			600	1000	1275
		Start	1,8-2,8(1,5-3,1)(5,5-6,9)	7,0-7,7(6,7-8,0)	
			200	1000	1275
2.2 Supply pump	rev/min kp/cm <sup>2</sup>		1,7-2,2(1,5-2,4)	(5,5-6,4)	6,7-7,2(6,5-7,4)
			500		1275
Overflow delivery	rev/min cm <sup>3</sup> /10 s		55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1440-1500 (1420-1520) 1400 1250 800 500	0  70,5-73,5 64,5-67,5	(37,0-47,0) (69,5-74,5) (73,5-75,5) (63,5-68,5)
	Stop	1275	0	
Idle stop	Full	470-520 (450-540) 350	0  (11,0-19,0)	
	Start	100	mind.120,0	
End stop		110-230		

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 51 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,00 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 5,2 b

3. Edition  
En

VA 6/110 H 1200 CR 185-2 Nozzle-and-holder assembly  
0 460 316 034 1 688 901 020 (172 + 3 bar)

supersedes 5.79  
company Fiat  
engine 8065.04

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,7-6,7 mm		
1.2 Supply pump pressure	1000	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	71,0-72,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 110,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	38,0-46,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	300-450(270-480) 800 1000 1030-1180	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	Start 3,9-4,9(3,5-4,2)(5,4-7,0) 7,0-7,7(6,7-7,9) 200 1000 1200	
		1,2-1,7(1,0-1,9) (5,2-6,1) 6,2-6,7(6,0-6,9)	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 1200 55-100(40-110) 55-100(40-110)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1370-1430 (1350-1450) 1300 1250-1270 1180 800 500	0  Start 67,0-70,0 (66,0-71,0) 59,5-62,5 (58,5-63,5)	
	Stop	1200	0	
Idle stop	Full	470-520 (450-540) 350 100	0  Start 11,0-19,0	
	Start	110-230	mind. 110,0	
End stop				

H21

11 21

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 54 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump = -- mm Dimension IV = -- mm Dimension V

Testoil-ISO 4113

H22

En

1/22

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 5,2 a 1

2. Edition

En

VA 6/110 H 1200 CR 185-1  
0 460 316 026

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 4.76  
Fiat  
company 8065.04.207  
engine

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,02(± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,7-6,7 mm		
1.2 Supply pump pressure	1000	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	69,5-70,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 120,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	38,0-46,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	Start 300-450(270-480) 600 800 1000 1030-1180 1,6-2,6(1,3-2,9) 3,9-4,9(3,6-5,2(5,4-7,0) 7,0-7,7(6,7-8,0)		
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 1000 1200		
Overflow delivery	rev/min cm <sup>3</sup> /10 s	1,5-2,0(1,3-2,2) (5,2-6,1) 6,2-6,7(6,0-6,9) 500 1200 55-100(40-110) 55-100(40-110)		

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1380-1440 (1360-1460) 1300 1250-1270 1180 800 500	0  Start 71,0-74,0 (70,0-75,0) (69,0-71,0) 58,0-61,0 (57,0-62,0)	
	Stop		1200	0	
Idle stop	Full		470-520 (450-540) 350	0  (11,0-19,0)	
	Start		100	mind. 120,0	
End stop			110-230		

Testoil-ISO 4113

H23

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t/23

Angle to the stop-plate	Pre-setting dimensions
Pump = $25 \pm 4^\circ$ $\alpha = 54 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump = 3,6 mm Dimension IV = 24,6 mm

Testoil-ISO 4113

H24

En

H24

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 5,2 a

2. Edition

En

VA 6/110 H 1200 CR 185  
0 460 316 024

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 6.75  
company Fiat  
engine 8065.02

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,02(± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoii-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,7-6,7 mm		
1.2 Supply pump pressure	1000	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	63,0-64,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.120,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-450(270-480)	600	1000	1030-1180
	mm	Start	1,6-2,6(1,3-2,9) (5,4-7,0)	7,0-7,7(6,7-8,0)	
2.2 Supply pump	rev/min	200		1000	1200
	kp/cm <sup>2</sup>	1,5-2,0(1,3-2,2)		(5,2-6,1)6,2-6,7(6,0-6,9)	
Overflow delivery	rev/min	500			1200
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1420 (1340-1440)	0	
		1300	(30,0-40,0)	
		1180	62,0-65,0 (61,0-66,0)	
		800	(62,5-64,5)	
		500	46,5-49,5 (45,5-50,5)	
	Stop	1200	0	
Idle stop	Full	470-520 (450-540)	0	
		350	(11,0-19,0)	
		100	mind.120,0	
End stop	Start	110-230		

J1

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 3,6 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

J2

En

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 4,4 c

2. Edition  
En

VA 4/110 H 1200 CR 188-1

CR 188-1 P Nozzle-and-holder assembly

0 460 314 039

1 688 901 020 (172 + 3 bar)

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,02(± 0,04

supersedes 1.79  
IHC  
company D 268/270 A  
engine.

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	4,8-5,8 mm		
1.2 Supply pump pressure	700	4,4-4,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	77,5-78,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.95,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1280	34,0-42,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	220-370(190-400)	400	700	770-920
	mm	Start 1,2-2,2(0,9-2,5)	(4,5-6,1)	6,1-6,8(5,8-7,1)	
2.2 Supply pump	rev/min	200		700	1200
	kP/cm <sup>2</sup>	1,7-2,2(1,5-2,4)		(4,2-5,1)	6,4-6,9(6,2-7,1)
Overflow delivery	rev/min	500			1200
	cm <sup>3</sup> /10s	55-100(40-110)		55-100(40-110)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1380 (1310-1400)	0	
		1280	(33,0-43,0)	
		1150	(79,0-84,0)	
		800	(77,0-79,0)	
		500	(73,0-78,0)	
	Stop	1200	0	
Idle stop	Full	450-530 (440-550)	0	
		400	(10,0-18,0)	
	Start	100	mind.95,0	
End stop		250-350		

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J3

Angle to the stop-plate	Pre-setting dimensions
Pump = $25 \pm 4^\circ$ $\alpha = 36 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump = 1,60 mm Dimension IV = 24,65 mm Dimension V

Testoil-ISO 4113

J4

En

J4

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 3,9 k

2. Edition

En

VA 4/100 H 1200 CR 187

CR 187 P

0 460 304 232/233 P

Nozzle-and-holder assembly

1 688 901 020 (172 ± 3 bar)

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 8.77  
company IHC  
engine D 239

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,6-4,6 mm		
1.2 Supply pump pressure	900	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	70,0-71,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	24,0-32,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	--	500	900 1000-1150
	mm	Start	1,3-2,3(1,0-2,6)(3,3-4,9)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200	900	1200
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(4,5-5,4)	5,7-6,2(5,5-6,4)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1380 (1310-1400) 1300 1220-1240 1180 800 500	0  Start 74,0-77,0 800 68,0-71,0	(23,0-33,0)  (73,0-78,0) (69,5-71,5) (67,0-72,0)
	Stop	1200	0	
Idle stop	Full	420-490 (400-510) 350	0	(11,0-19,0)
	Start	100	mind.85,0	
End stop		250-350		

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J5

05

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,80 mm</p> <p>Dimension V = 24,65 mm</p>

Testoil-ISO 4113

J6

En

76

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 u

2. Edition

En

VA 6/10 H 1500 CR 189-1  
CR 189 1P Nozzle-and-holder assembly  
0 460 306 258 1 688 901 020 (172 + 3 bar)  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 3.81  
company IHC  
engine D 358/1730 B

Pre-stroke setting 0,4 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,7-5,5 mm		
1.2 Supply pump pressure	1000	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	68,0-69,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	330	15,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.75,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1550	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets			
2.1 Timing device	rev/min	--	600	1000	1200
	mm	Start	1,2-2,2(0,9-2,5)	(4,4-5,8)	6,1-7,1(5,8-7,4)
2.2 Supply pump	rev/min		200	1000	1500
	kp/cm <sup>2</sup>		1,6-2,1(1,4-2,3)	(5,2-6,1)	7,2-7,7(6,9-8,0)
Overflow delivery	rev/min		500		1500
	cm <sup>3</sup> /10 s		55-100(40-110)		55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1610-1660 (1590-1680)	0	
		1550	(35,0-45,0)	
		1450	(63,0-68,0)	
		900	(67,5-69,5)	
		500	(59,0-65,0)	
	Stop	1500	0	
Idle stop	Full	380-430 (360-450)	0	
		330	(14,0-22,0)	
	Start	100	mind.75,0	
End stop		260-360		

J7

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 49 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump = 2,30 mm Dimension IV = 24,65 mm

Testoil-ISO 4113

J8

En

28

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 FIA,3,6 a

3. Edition

En

VA 4/110 H 1600 CR 190  
0 460 314 033

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 12.78  
company Fiat  
engine 8040.04

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,5 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,6-5,6 mm		
1.2 Supply pump pressure	1000	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	700	71,0-72,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	14,0-20,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.110,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1750	36,0-44,0 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	430-580(400-610)	1000	1400	1450-1600
	mm	Start	(4,3-5,9)9,3-10,3	(9,0-10,6)10,7-11,4(10,4-11,7)	
2.2 Supply pump	rev/min	200	1000		1600
	kp/cm <sup>2</sup>	1,0-1,5(0,8-1,7)	(5,1-6,0)		7,5-8,0(7,3-8,2)
Overflow delivery	rev/min	500			1600
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1930-2000 (1910-2020) 1750 1640-1660 1600 1000 700 500	0  Start 65,0-68,0 72,0-75,0 70,5-72,5 59,0-62,0 (58,0-63,0)	
	Stop	1600	0	
Idle stop	Full	330-380 (310-400) 300	0  (13,0-21,0)	
	Start	100	mind.110,0	
End stop		350-450		

J9

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,60 mm</p> <p>Dimension V = 24,65 mm</p>

**Testoil-ISO 4113**

**J10**

En

J10

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,8 k

2. Edition  
En

VA 6/100 H 1200 CR 51-1  
0 460 306 201  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 3.77  
company IHC  
engine D 358

Pre-stroke setting 0,3 mm ± 0,04

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	4,1-5,1 mm		
1.2 Supply pump pressure	900	5,8-6,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	64,0-65,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	Start 270-420(240-450)	500	800	900	1000-1150
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	0,8-1,8(0,5-2,1)	3,4-3,6(3,1-3,9)	(3,8-5,4)	5,2-5,9(4,9-6,2)	
		200			900	1200
Overflow delivery	rev/min cm <sup>3</sup> /10 s	2,4-2,9(2,2-3,1)			(5,6-6,5)	6,9-7,4(6,7-7,6)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1300-1350 (1280-1370) 1250 1210-1230 1150 800 500	0  Start 66,0-69,0 (65,0-70,0) (63,5-65,5) 62,5-65,5 (61,5-66,5)	
	Stop	1200	0	
Idle stop	Full	350-400 (330-420) 300	0  (11,0-19,0)	
	Start	100	mind.80,0	
End stop		220-320		

Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = 3,6 mm</p> <p>Dimension V = 24,6 mm</p>

Testoil-ISO 4113

J12

En

J12

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,1 n

2. Edition  
En

VA 6/100 H 1200 CR 191 Nozzle-and-holder assembly  
CR 191 P 1 688 901 020 (172 + 3 bar)  
0 460 306 214

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,4 mm ± 0,02 (± 0,04)

supersedes 8.77  
IHC  
company  
engine D 310

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,5-4,5 mm		
1.2 Supply pump pressure	900	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	64,0-65,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	450	11,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.80,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	27,0-33,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets			
2.1 Timing device	rev/min	490-540(460-570)	600	900	920-1050
	mm		Start	0,8-1,8(0,5-2,1)	(3,2-4,8) 4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		900	1200
	kP/cm <sup>2</sup>	1,5-2,0(1,3-2,2)		(5,1-6,0)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500			1200
	cm <sup>3</sup> /10 s	55-100(40-110)			55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1320-1380 (1300-1400) 1250 1180-1210 1150 800 500	0  Start 60,5-63,5 100 58,0-61,0	(26,0-34,0)  (59,5-64,5) (63,5-65,5) (57,0-62,0)
	Stop	1200	0	
Idle stop	Full	510-560 (490-580) 450	0  (10,0-20,0)	
	Start	100	mind.80,0	
End stop		250-380		

J13

J13

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension IV = 2,40 mm Dimension V = 24,65 mm

Testoil-ISO 4113

J14

En

314

# Test Specifications

## Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 g 1

2. Edition

En

VA 6/110 H 1100 CR 180-1  
 CR 180-1 P Nozzle-and-holder assembly  
 0 460 316 018 1 688 901 020 (172 + 3 bar)  
 Setting of the pointer at a stroke of 1 mm in  
 relation to outlet "A".

supersedes 10.76  
 company IHC  
 engine DT 358 "1246"

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

All test specifications are valid for  
 Bosch Fuel Injection Pump Test Benches  
 and Testers  
 Test Instructions and Test Equipment  
 VDT-WPP 161/4 B  
 Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	5,7-6,7 mm	0	
1.2 Supply pump pressure	800	4,8-5,3 kp/cm <sup>2</sup>	0	
1.3 Full-load delivery without charge-air pressure	500	78,5-81,5 cm <sup>3</sup> /1000 strokes	0,2	
Full-load delivery with charge-air pressure	800	85,5-86,5 cm <sup>3</sup> /1000 strokes	0,4	2,5
1.4 Idle speed regulation	450	14,5-20,5 cm <sup>3</sup> /1000 strokes	0	3,0
1.5 Start	100	mind.95,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	1180	41,0-49,0 cm <sup>3</sup> /1000 strokes	0,4	

### 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	200-350(170-380)	400	800	900-1050
Start		1,0-2,0(0,7-2,3)	(5,4-7,0)	6,9-7,6(6,6-7,9)	
200			800		1100
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)		(4,6-5,5)	6,0-6,4(5,8-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500			1100
		55-100(40-110)			55-100(40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1210-1280 (1190-1300)	0	0,4
		1180	(40,0-50,0)	0,4
		1100-1130	Start	
		1050	86,5-89,5 (85,5-90,5)	0,4
		800	(85,0-87,0)	0,4
		500	(77,5-82,5)	0,2
	Stop	1100	0	
Idle stop	Full	530-580 (510-600)	0	
		450	(13,5-21,5)	
	Start	100	mind.95,0	
End stop		220-320		

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J15

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma$ $\delta$	Pump Dimension IV = 0,6 mm Dimension V = 24,6 mm

Testoil-ISO 4113

J16

En

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,5 h

2. Edition

En

supersedes 3.76  
company IHC  
engine D 206

VA 4/100 H 1250 CR 12-15

Nozzle-and-holder assembly  
1 688 901 020 (172+3 bar)

Pre-stroke setting 0,5 mm ± 0,04

Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,2-5,2 mm		
1.2 Supply pump pressure	800	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	60,5-61,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	16,0-22,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1330	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start 180-330(150-360) 400 800 1100 1130-1250	
	mm	1,1-2,1(0,8-2,4) (3,9-5,5) 6,1-7,1(5,8-7,4)7,0-7,7(7,3-8,0)	
2.2 Supply pump	rev/min	200 800	1250
	kp/cm <sup>2</sup>	1,8-2,3(1,6-2,5) (4,6-5,5) 6,6-7,1(6,4-7,3)	
Overflow delivery	rev/min	500	1250
	cm <sup>3</sup> /10 s	55-100(40-110) 55-100(40-110)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1400 (1340-1420) 1330 1280-1300 1200 800 500	0  Start 58,0-61,0 51,0-54,0	(25,0-35,0) (57,0-62,0) (60,0-62,0) (50,0-55,0)
	Stop	1250	0	
Idle stop	Full	420-470 (400-490) 350	0  (15,0-23,0)	
	Start	100	mind.85,0	
End stop		220-320		

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump = 2,4 mm Dimension IV = 24,6 mm Dimension V

Testoil-ISO 4113

J18

En

310°

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,5 b 3

3. Edition  
En

VA 4/100 H 1090 CR 84  
0 460 304 180

supersedes 6.78  
company IHC  
engine D 206

Nozzle-and-holder assembly  
1 688 901 020 (172+3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testels  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm  $\pm$  0,02 ( $\pm$  0,04)  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	2,9-3,7 mm		
1.2 Supply pump pressure	700	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	62,0-63,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1125	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	Start 220-350(190-380) 0,6-1,6(0,3-1,9)	400 (2,6-4,0)3,8-4,8(3,5-5,1)	700 4,7-5,4(4,4-5,7)	850	1090
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	200 2,2-2,7(2,0-2,9)		700 (4,6-5,5)		1090 6,3-6,8(6,1-7,0)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-110)				1090 55-100(40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1085-1215 (1065-1235) 1125 1080 800 500	0 65,5-68,5 (30,0-40,0) (64,5-69,5) (61,5-63,5) 54,5-57,5 (53,5-58,5)	
	Stop	1090	0	
Idle stop	Full	460-520 (440-540) 350	0 (16,0-24,0)	
	Start	100 220-300	mind.90,0	

J19

919

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Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> = 2,4 mm <b>Dimension IV</b> = 25,0 mm

Testoil-ISO 4113

J20

En

9 20

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 JHC 5,1 c

3. Edition

En

VA 6/100 H 1150 BR 21  
0 460 306 037

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 6.69  
company JHC  
engine D 310

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,9-6,9 mm		
1.2 Supply pump pressure	1100	6,9-7,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	61,5-62,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	560-720 (530-750)	1100	1110-1180
	mm	Start	(5,6-7,2)	6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min	100	500	1100
	kp/cm <sup>2</sup>	2,1-2,6(1,9-2,8)	4,6-5,1(4,4-5,3)	(6,7-7,6)
Overflow delivery	rev/min		1000	
	cm <sup>3</sup> /10 s		30-55(15-70)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>3</sup>
End stop	Full	1270-1320 (1250-1340) 1250 1140-1190 1130 800 500	0  Start 63,0-66,0 58,5-61,5	(15,0-25,0) (62,0-67,0) (61,0-63,0) (57,5-62,5)
	Stop	1150	0	
Idle stop	Full	340-390 (320-410) 300	0  (6,0-14,0)	
	Start	100 500 mind.180	mind.90,0 max. 47,5	
End stop				

J21

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521

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV - mm Dimension V - mm

**Testoil-ISO 4113**

Screw plug 1 463 462 017  
Total length 24,0 mm

Dimension I = 7,0 mm  
Dimension II = 14,0 mm  
Dimension III = 35,8 mm  
Dimension IV = - mm

Screw plug 1 463 462 003  
Total length 32,0 mm

Dimension I = 7,0 mm  
Dimension II = 7,0 mm  
Dimension III = 27,8 mm  
see BMP 161/32

# Test Specifications

## Distributor-Type Fuel Injection Pump

WPP 001/4 JHC 5,1 c 5

1. Edition

46

En

VA 6/100 H 1500 BR 20      Nozzle-and-holder assembly  
0 460 306 036      1 688 901 020 (172 + 3 bar)

supersedes      10.76  
company      JHC  
engine      D 310

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting      0,4 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	7,8-8,8 mm		
1.2 Supply pump pressure	800	5,1-5,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1000	71,0-72,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind.70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1560	34,5-42,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	250-400 (220-430)	800	1090-1240
	mm	Start	(7,5-9,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1500
	kp/cm <sup>2</sup>	1,3-1,8 (1,1-2,0)	(4,9-5,8)	7,5-8,0 (7,3-8,2)
Overflow delivery	rev/min	500		1500
	cm <sup>3</sup> /10 s	mind.25,0		85-125(70-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1660-1780 (1640-1800) 1690 1560 1480 1000 500	0 max. 5,0 34,5-42,5 58,0-62,0 (33,5-43,5) (57,0-63,0) 1000 57,0-62,5 (70,5-72,5) (56,0-63,5)	
	Stop	1500	0	
Idle stop	Full	300-370 (280-390) 250	0 (11,0-19,0)	
	Start	100 mind.180	mind.70,0	
End stop				

J23

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723

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,0 mm</p> <p>Dimension V = 25,0 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 JHC 5,8 a 2

1. Edition

En

VA 6/100 H 1400 BR 19-2  
0 460 306 119

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes  
company  
engine

JHC  
D 358/T0E

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting  $\pm 0,02\text{mm} (\pm 0,04)$

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	6,7-7,7 mm		
1.2 Supply pump pressure	900	4,6-5,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1200	77,0-78,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	13,0-19,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1500	47,0-55,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	330-480 (300-510) Start	900 (6,4-8,0)	1250-1500 11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	900	1400
Overflow delivery	rev/min cm <sup>3</sup> /10 s	0,8-1,3 (0,6-1,5) 500	(4,4-5,3)	6,2-6,7 (6,0-6,9) 1000
		mind. 25		55-125 (40-140)

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1570-1650 (1550-1670)	0 1500 1370 1200 900 500	(46,0-56,0) (72,5-77,5) (76,5-78,5) (69,5-74,5) (61,5-67,5)
	Stop	1400	0	
Idle stop	Full	450-510 (430-530)	0	
	Start	350 100 500		(12,0-20,0)
End stop		mind.180	mind.90,0 30,0-62,0	(29,0-63,0)

Testoil-ISO 4113

K1

K1

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

K2

En

H 2

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 SAM 1,0 a

1. Edition

En

VA 4/110 H 1100 BR 158

0 460 314 011

supersedes

company

engine

Same

DA 1004

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm

Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	5,3-6,3 mm		
1.2 Supply pump pressure	800	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	72,0-73,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 110 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1150	38,5-46,5 cm <sup>3</sup> /1000 strokes		

#### 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	350-500 (320-530)	800	900-1050
		Start	(5,0-6,6)	8,7-9,4 (8,4-9,7)
		100	800	1100
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	0,5-1,0 (0,3-1,2)	(4,3-5,2)	5,9-6,4 (5,7-6,6)
		500		1000
Overflow delivery	rev/min cm <sup>3</sup> /10 s	mind. 25		55-125 (40-140)

#### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1220-1280 (1200-1300)	0	
		1150	38,5-46,5 (37,5-47,5)	
		1050	72,0-75,0 (71,0-76,0)	
		800		(71,5-73,5)
		500	68,5-71,5 (67,5-72,5)	
	Stop	1100	0	
Idle stop	Full	480-530 (460-550)		
		400		(16,0-24,0)
		100		
End stop	Start	110-210	mind. 110	

K3

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10.81

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

K4

En

K4

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 GUL 2,3 b 1

1. Edition

En

VA 3/100 H 1000 BR 111  
0 460 303 043

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes  
company Guldner  
engine 3 L 79

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,1 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	4,9-5,9 mm		
1.2 Supply pump pressure	700	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	700	50,0-51,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 110,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1050	15,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	380-540 (350-570)	700	840-1000
	mm	Start	(4,6-6,2)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	700	1000
	kp/cm <sup>2</sup>	1,3-1,8 (1,1-2,0)	(4,7-6,1)	6,0-6,5 (5,8-6,7)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind. 25		55-125 (40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1050-1110 (1030-1130)  1050 930-1030 980 700 500	0  Start 54,0-57,0- 42,0-45,0	(15,0-25,0)  (53,0-58,0) (49,5-51,5) (41,0-46,0)
	Stop	1000	0	o
Idle stop	Full	270-320 (250-340)  250	0  (16,0-24,0)	
	Start	100	mind. 110,0	
End stop		130-230		

K5.

15

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Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 48 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension IV = - mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 9,0 mm Dimension III = 30,8 mm

Testoil-ISO 4113

K6

En

k6

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

NPP 001/4 IHC 5,1 g 1

1. Edition

En

VA 6/100 H 1200 BR 51-1

0 460 306 081

supersedes  
company  
engine

IHC  
D 358 DU

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,3 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1100	5,6-6,6 mm		
1.2 Supply pump pressure	1100	6,3-6,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	66,6-67,6 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1250	41,0-49,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	560-720 (530-750)	1100	1110-1210
	mm	Start	(5,3-6,9)	6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min	100	1100	
	kp/cm <sup>2</sup>	1,4-1,9 (1,2-2,1)	(6,0-7,1)	
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 25	55-125 (40-140)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1320-1370 (1300-1390)	0	
		1250	(40,0-50,0)	
		1150	69,5-72,5 (68,5-73,5)	
		800	(66,0-68,0)	
		500	63,0-66,0 (62,0-67,0)	
	Stop	1200	0	
Idle stop	Full	360-410 (340-430)	0	
		300	(11,0-19,0)	
	Start	100		
		500	mind. 90,0	
End stop			max. 55,0	

K7

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W7

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump = 2,0 mm Dimension IV = - mm Dimension V = - mm

Testoil-ISO 4113

K8

En

K8

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,5 n

1. Edition

En

VA 4/100 H 1250 BR 64 -P  
0 460 304 117

supersedes  
company      IHC  
engine        D 209

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting      0,5 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	8,8-9,8 mm		
1.2 Supply pump pressure	800	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	57,0-58,0 cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	38,0-46,0 cm <sup>3</sup> /1000 strokes		

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	200-350 (170-380) Start	800 (8,5-10,1)	1050-1200 13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100 1,3-1,8 (1,1-2,0)	800 (4,7-5,6)	1250 6,5-7,0 (6,3-7,2)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 mind. 25	1000 55-125(40-140)	

2.3 Fuel deliveries	Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full		1330-1380 (1310-1400)	0	
			1300	(37,0-47,0)	
			1200	58,5-61,5 (57,5-62,5)	
			800	(56,5-58,5)	
			500	48,5-51,5 (47,5-52,5)	
		Stop	1250	0	
Idle stop	Full		390-440 (370-460)	0	
			350	(11,0-19,0)	
			100	mind. 90,0	
			500	30,0-50,0	
End stop	Start		mind. 180		

Testoil-ISO 4113

K9

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

K10

En

KAO

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 GUL 3,1 a 1  
1. Edition  
En

VA 4/100 H 1250 BR 106-1  
0 460 304 051

supersedes  
company  
engine

Güldner  
4 L 79

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,1 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	4,5-5,5 mm		
1.2 Supply pump pressure	1150	5,6-6,1 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	54,0-55,0 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	250	14,0-17,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.100,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1270	16,0-24,0 cm <sup>3</sup> /1000 strokes		3,0

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	350-510 (320-540) Start	700 (4,2-5,8)	990-1150 10,7-11,4(10,4-11,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100 0,9-1,4 (0,7-1,6)	200 3,9-4,4(3,7-4,6)	1150 (5,4-6,3)
Overflow delivery	rev/min cm <sup>3</sup> /10 s			1000 55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1275-1325 (1255-1345) 1270 1130 800 500	0 56,5-59,5 56,5-59,5 44,5-47,5	(15,0-25,0) (55,5-60,5) (53,5-55,5) (43,5-48,5)
	Stop	1250	0	
Idle stop	Full	280-330 (260-350) 250	0	(10,0-18,0)
	Start	100	mind.100,0	
End stop		130-230		

K11

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K11

Angle to the stop-plate	Pre-setting dimensions
Pump = $25 \pm 4^\circ$ $\alpha = 40 \pm 8^\circ$ $\beta = 30 - 8^\circ$ $\gamma = 60 + 8^\circ$	Pump Dimension IV = - mm Dimension V = - mm Dimension I = 7,0mm Dimension II = 11,0mm Dimension III = 32,8mm

Testoil-ISO 4113

K12

En

K12

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

WPP 001/4 GUL 2,3 a 1

1. Edition

En

46

VA 3/100 H 1250 BR 105-1  
0 460 303 042

supersedes  
company      Guldner  
engine      3 L 79

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,1 mm  $\pm$  0,02 ( $\pm$  0,04)  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	5,5-6,5 mm		
1.2 Supply pump pressure	700	4,2-4,7 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	57,0-58,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	11,0-17,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 100,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	16,0-24,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	330-540 (300-570)	700	1000-1130
	mm	Start	(5,2-6,8)	10,7-11,4(10,4-11,7)
2.2 Supply pump	rev/min	100	700	1250
	kp/cm <sup>2</sup>	0,9-1,4 (0,7-1,6)	(4,0-4,9)	5,8-6,3 (5,6-6,5)
Overflow delivery	rev/min	500	1250	1250
	cm <sup>3</sup> /10 s	mind. 25	55-125 (40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1380 (1310-1400)	0	
		1300	(15,0-25,0)	
		1130	(59,0-64,0)	
		800	(56,5-58,5)	
		500	(46,5-51,5)	
	Stop	1250	0	
Idle stop	Full	290-340 (270-360)	0	
		250	(10,0-18,0)	
	Start	100	mind. 100,0	
End stop		120-230		

K13

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K13

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 55 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 + 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 1,0 mm (see BMP 161/32)</p> <p>Dimension V = - mm</p> <p>Dimension I = 7,0 mm</p> <p>Dimension II = 11,0 mm</p> <p>Dimension III = 32,8 mm</p>

Testoil-ISO 4113

K14

En

K14

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,5 c  
2. Edition

En

VA 4/100 H 1150 BR 46  
0 460 304 080

supersedes  
company  
engine

10.69  
IHC  
D 206

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm  
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	9,3-10,3 mm		
1.2 Supply pump pressure	800	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	64,0-65,0 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	350	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 85 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	37,0-43,0 cm <sup>3</sup> /1000 strokes		

Testoil-ISO 4113

2. Test Specifications		Checking values in brackets		
2.1 Timing device	rev/min mm	250-400 (220-430)	800	950-1100
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	Start 100 1,0-1,5 (0,8-1,7)	(9,0-10,6) 800 (4,8-5,7)	13,7-14,4 (13,4-14,7) 1150 6,4-6,9 (6,2-7,1)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 mind. 25	1000 55-125 (40-140)	

2.3 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End Stop	Full	1270-1320 (1250-1340)	0 67,5-69,5 56,5-59,5	(36,0-44,0) (66,5-70,5) (63,5-65,5) (55,5-60,5)
	Stop	1150	0	
Idle Stop	Full	410-460 (390-480)	0 mind. 85	(16,0-24,0) (33,0-46,0)
	Start	350 100 500 mind. 150	34,0-45,0	
End stop				

K15

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K15

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 35 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 2,0 mm BMP 161/32 Dimension V = - mm

Testoil-ISO 4113

K16

En

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 3,9 a 4

2. Edition

En

VA 4/100 H 1100 BR 12-2  
0 460 304 079

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes  
company  
engine

5.77  
IHC  
D 239-544 CD

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,02 ( $\pm 0,04$ )

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	9,0-10,0 mm		
1.2 Supply pump pressure	700	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	61,5-62,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind.100 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1150	36,5-44,5 cm <sup>3</sup> /1000 strokes		3,0

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	150-300 (120-330)	700	930-1080
	mm	Start	(8,7-10,3)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	700	1100
	kp/cm <sup>2</sup>	1,2-1,7 (1,0-1,9)	(4,5-5,4)	6,1-6,6 (5,9-6,8)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind.25		55-125 (40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1200-1250 (1180-1270) 1150 1100 800 500	0 (35,5-45,5) (60,5-65,5) (61,0-62,0) (55,5-60,5)	
	Stop	1100	0	
Idle stop	Full	370-450 (340-480) 350	0 (11,0-19,0)	
	Start	100 500	mind.100 (34,0-51,0)	
End stop		mind.180		

K17

K17

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 0,5 mm</p> <p>Dimension V = - mm</p> <p>Dimension I = 7,0 mm</p> <p>Dimension II = 14,0 mm</p> <p>Dimension III = 35,8 mm</p>

Testoil-ISO 4113

K18

En

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 a 3

2. Edition

En

VA 4/100 H 1200 BR 12-1      0 460 304 078  
    BR 12-9      0 460 304 159

supersedes      5.77

company      IHC

engine      D 239-544 HS

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches

and Testers

Test Instructions and Test Equipment

VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting      0,5 mm ± 0,02 ( ± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	8,7-9,7 mm		
1.2 Supply pump pressure	700	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	69,5-70,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.100,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1240	41,0-49,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	200-350 (170-380)	700	980-1130
	mm	Start	(8,4-10,0)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	700	1200
	kp/cm <sup>2</sup>	1,2-1,7 (1,0-1,9)	(4,3-5,2)	6,5-7,0 (6,3-7,2)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	mind.25		55-125(40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1260-1310 (1240-1330)	0	
		1240	(40,0-50,0)	
		1150	71,0-73,0 (70,0-74,0)	
		800	(69,0-71,0)	
		500	66,0-69,0 (65,0-70,0)	
	Stop	1200	0	
Idle stop	Full	430-500 (410-520)	0	
		350	(16,0-24,0)	
		100	mind.100	
End stop	Start	mind. 180		

K19

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K19

Angle to the stop-plate	Pre-setting dimensions
<b>Pump</b> $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	<b>Pump</b> Dimension IV = 0,5 mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 14,0 mm Dimension III = 35,8 mm

Testoil-ISO 4113

K20

En

K20

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 c

2. Edition

En

VA 4/100 H 1250 BR 67

0 460 304 121

supersedes  
company  
engine

6.70  
IHC  
D 239

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,5 mm

Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	8,8-9,8 mm		
1.2 Supply pump pressure	800	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	67,5-68,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind.90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1330	28,5-36,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350 (170-380)	800	1050-1200
	mm	Start	(8,5-10,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1250
	kP/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
3 Overflow delivery	rev/min cm <sup>3</sup> /10 s	500	1000	
		mind.25	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1350-1400 (1330-1420)  1330 1200 800 500	0  (27,5-37,5) 63,0-66,0(62,0-67,0) (67,0-69,0) 64,5-67,5(63,5-68,5)	
	Stop	1250	0	
Idle stop	Full	390-440 (370-460)  350	0  (11,0-19,0)	
	Start	100 500 mind.180	mind.90,0 max. 35,0-60,0	
End stop				

K21

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 0,5 mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

K22

En

1622

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,5 m

1. Edition  
En

VA 4/100 H 1250 BR 64-1  
0 460 304 119

supersedes  
company  
engine  
IHC  
D 209

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,5 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	8,8-9,8 mm		
1.2 Supply pump pressure	800	4,9-5,4 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	52,5-53,5 cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	32,0-38,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min mm	200-350(170-380)	800	1050-1200
		Start	(8,5-10,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	800	1250
		1,3-1,8(1,1-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500	1000	
		mind. 25	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1320-1370 (1300-1390)  1300 1200 800 500  1250	0  48,5-51,5 (31,0-39,0) (47,5-52,5) (52,0-54,0)  0	
Idle stop	Full	390-440 (370-460)  350	0  (11,0-19,0)	
	Start	100 500 mind. 180	mind. 90,0 30,0-45,0 (29,0-46,0)	
End stop				

K23

123

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Angle to the stop-plate	Pre-setting dimensions
<p><b>Pump</b></p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p><b>Pump</b></p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

K24

En

K 24

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 DEE 2,5 i

1. Edition

En

VA 3/100 H 1250 BR 26-1

0 460 303 050

supersedes  
company  
engine

John Deere  
44 B

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	7,8-8,8 mm		
1.2 Supply pump pressure	800	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	70,0-71,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	--	-- cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	38,0-46,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	160-330 (130-360)	800	1030-1180
	mm	Start	(7,5-9,1)	12,2-12,9(11,9-13,2)
2.2 Supply pump	rev/min	100	800	1250
	kp/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(4,8-5,7)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 27	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1460 (1340-1480) 1400 1300 1200 1100 500 100	0 max. 5,0 68,0-71,0 58,0-62,0 mind. 45,5	(37,0-47,0) (67,0-72,0) (69,5-71,5) (57,0-63,0)
	Stop	1250	0	
Idle stop	Full	520-580 (500-600) 400	0 (8,0-10,0)	
End stop	Start			

L1

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L1

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 44 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump = 2,5 mm Dimension IV = - mm Dimension V = 7,0 mm Dimension I = 12,0 mm Dimension III = 28,3 mm

Testoil-ISO 4113

L2

En

L2

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 DEE 2,5 h

1. Edition

En

VA 3/100 H 1250 BR 26  
0 460 303 034

supersedes  
company  
engine

John Deere  
152 D 27 D

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting mm

Testoil-ISO 4113

1. Settings		rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel		800	7,8-8,8 mm		
1 2 Supply pump pressure		800	5,0-5,5 kp/cm <sup>2</sup>		
1 3 Full-load delivery without charge-air pressure		1150	64,0-66,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure		--	-- cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation		400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1 5 Start		--	-- cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation		1310	31,0-39,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	160-330(130-360)	800	1030-1180
	mm	Start	(7,5-9,1)	11,7-12,4(11,4-12,7)
2 2 Supply pump	rev/min	100	800	1250
	kP/cm <sup>2</sup>	1,3-1,8(1,1-2,0)	(4,8-5,7)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind.25	55-125(40-140)	

### 2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1340-1430 (1320-1450) 1380 1310 1230 1150 800 100	0 max.6,0 59,0-61,0 (30,0-40,0) (58,0-62,0) 58,0-62,0 (63,5-66,5) mind.38,0	
	Stop	1250	0	
Idle stop	Full	520-580 (500-600) 400	0 (8,0-16,0)	
End stop	Start			

L3

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L3

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 50 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 2,5 mm</p> <p>Dimension V = - mm</p> <p>Dimension I = 7,0 mm</p> <p>Dimension II = 12,0 mm</p> <p>Dimension III = 28,3 mm</p>

Testoil-ISO 4113

L4

En

L4

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,1 d 2

1. Edition

En

VA 6/100 H 1200 BR 44-1  
0 460 306 105

supersedes  
company IHC  
engine D 310

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,3 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	4,8-5,8 mm		
1.2 Supply pump pressure	900	6,0-6,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	60,0-61,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	500	9,5-15,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.95,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	22,0-28,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets			
2.1 Timing device	rev/min	500-650 (470-680)	900
	mm	Start	(4,5-6,1)
2.2 Supply pump	rev/min	100	900 1200
	kp/cm <sup>2</sup>	1,8-2,3(1,6-2,5)	(5,8-6,7) 7,0-7,5(6,8-7,7)
Overflow delivery	rev/min		1000
	cm <sup>3</sup> /10 s		55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1380 (1310-1400)	0	
		1300	(21,0-29,0)	
		1180	63,0-66,0 (62,0-67,0)	
		800	(59,0-61,5)	
		500	55,5-58,5 (54,5-59,5)	
	Stop	1200	0	
Idle stop	Full	530-580 (510-600)	0	
		500	(8,5-16,5)	
End stop	Start	100	mind.95,0	
		500	max. 30,0	
		mind.150		

L5

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L5

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump = 2,5 mm Dimension IV = - mm Dimension V = - mm

Testoil-ISO 4113

L6

En

L6

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 2,4 a 4

1. Edition

En

VA 3/100 H 950 BR 43      0 460 303 040  
BR 43-1      0 460 303 115

supersedes  
company      IHC  
engine      D 155

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDT-WPP 161/4 B

Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	500	7,3-8,3 mm		
1.2 Supply pump pressure	500	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	700	55,5-56,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	15,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start 196 bar	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1000	18,5-26,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	120-270(90-300) Start	500 (7,0-8,6)	740-900 12,7-13,4(12,4-13,7)
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100 1,8-2,3(1,6-2,5)	500 (4,8-5,7)	950 6,9-7,4(6,7-7,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 mind. 27,0	950 55-125(40-135)	1000 55-125(40-135)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1010-1060 (990-1080) 1000 900 700 500	0 57,5-60,5 (17,5-27,5) (56,5-61,5) (55,0-57,0) 50,0-54,0 (49,0-55,0)	
	Stop	950	0	
Idle stop	Full	460-510 (440-530) 400 500 100 500	0 35,0-45,0 (14,0-22,0) (34,0-46,0)	
End stop	Start	mind. 150,0	mind. 90,0 35,0-45,0 (34,0-46,0)	

Testoil-ISO 4113

L7

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L7

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 37 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump = 2,0 mm</p> <p>Dimension IV = - mm</p>

Testoil-ISO 4113

L8

En

L8

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,1 b

3. Edition  
En

VA 6/100 H 1100 BR 37  
0 460 306 039

supersedes 12.70  
company IHC  
engine D 310

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	5,5-6,5 mm		
1.2 Supply pump pressure	700	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	62,5-63,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	30,0-36,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.95,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1150	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	260-420(230-450)	700	920-1080
	mm	Start	(5,2-6,8)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	700	1100
	kp/cm <sup>2</sup>	1,2-1,7(1,0-1,9)	(5,3-6,2)	6,0-7,4(6,7-7,6)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind.25	55-125(40-140)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1200-1250 (1180-1270) 1150 1050 800 500	0 (35,0-45,0) (64,0-69,0) (62,0-64,0) (59,0-64,0)	
	Stop	1100	0	
Idle stop	Full	370-420 (350-440) 250	0 (29,0-37,0)	
	Start	100 500	mind.95,0 max. 45,0	
End stop		mind.150		

L9

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L9

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump = 5,5 mm</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Testoil-ISO 4113

L10

En

L10

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,8 D 2

1. Edition

En

VA 6/100 H 1125 BR 36-1

0 460 306 123

supersedes

company

IHC

engine

D 358

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,3 mm  
Plunger lift of 1,0 mm related to outlet "A"

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment:  
VDT-WPP 161/4 B

Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	5,3-6,3 mm		
1.2 Supply pump pressure	700	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	70,0-71,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1225	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	350-500(320-530)	700	940-1100
	mm	Start	(5,0-6,6)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	700	1125
	kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	(5,2-6,1)	6,9-7,4(6,7-7,6)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 25	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1295-1350 (1275-1370)	0	
		1225	(25,0-35,0)	
		800	(70,0-75,0)	
		800	(69,5-71,5)	
		500	(65,0-68,0)	
	Stop	1125	0	
Idle stop	Full	370-450 (350-470)	0	
		250	(16,0-24,0)	
	Start	100	mind. 90,0	
		500	30,0-70,0	
End stop		mind. 150	(29,0-71,0)	

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L11

L11

Angle to the stop-plate	Pre-setting dimensions
Pump = $25 \pm 4^\circ$ $\alpha = 30 \pm 8^\circ$ $\beta = 30 - 8^\circ$ $\gamma = 60 \pm 8^\circ$	Pump Dimension IV = 3,6 mm Dimension V = 24,6 mm

Testoil-ISO 4113

L12

En

L12

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 DEE 2,5 f

3. Edition

En

VA 3/100 H 1200 BR 29  
0 460 303 036

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes 12.71  
company John Deere  
engine X 21

Adjustment of the pointer at plunger stroke 1.72 mm, related to outlet "A", corresponds to TDC position of relevant cylinder.

Pre-Stroke setting 0,3 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  
Test Instructions and Test Equipment VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	6,3-7,3 mm		
1.2 Supply pump pressure	700	4,3-4,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	1100	61,0-62,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	--	-- cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1260	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets				
2.1 Timing device	rev/min	100-310(70-340)	700	1050-1200
	mm	Start	(6,0-7,6)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	700	1200
	kp/cm <sup>2</sup>	1,7-2,2(1,5-2,4)	(4,1-5,0)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 25,0	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1370 (1310-1390) 1320 1260 1180 1100 700 100	0 max. 5,0 57,5-59,5 54,0-57,0 mind. 35,0	(25,0-35,0) (56,5-60,5) (60,5-62,5) (53,0-58,0)
	Stop	1200	0	
Idle stop	Full	520-580 (500-600) 400	0	(8,0-16,0)
End stop	Start	--	--	

Testoil-ISO 4113

L13

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613

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 - 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = -- mm Dimension V = -- mm Dimension I = 7,0mm Dimension II = 12,0mm Dimension III = 28,3mm

Testoil-ISO 4113

L14

En

L14

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 3,9 b 2

1. Edition  
EN

VA 4/100 H 1050 BR 12-5  
0 460 304 109

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Nozzle-and-holder assembly  
1 688 901 020 (172+3 bar)

supersedes  
company IHC  
engine D 206 charger 100

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	5,3-6,3 mm		
1.2 Supply pump pressure	600	4,1-4,6 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	61,5-62,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1100	19,0-27,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min mm	250-400(220-430)	600	810-930
	Start	(5,0-6,6)	9,7-10,4(9,4-10,7)	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	100	600	1050
		1,1-1,6(0,9-1,8)	(3,9-4,8)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500		1050
		mind. 25		55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1110-1160 (1090-1180) 1100 1000 900 500	0 (18,0-28,0) (60,0-64,0) (61,0-63,0) (58,5-63,5)	
	Stop	1050	0	
Idle stop	Full	390-440 (370-460) 350	0 (11,0-19,0)	
--	Start	100 500	mind. 90,0 (34,0-61,0)	
End stop		mind. 150	35,0-60,	

L 15  
L A 5  
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Angle to the stop-plate	Pre-setting dimensions
<p>Pump <math>\alpha = 25 \pm 4^\circ</math> <math>\beta = 40 \pm 8^\circ</math> <math>\gamma = 30 - 8^\circ</math> <math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump Dimension IV = -- mm Dimension V = -- mm</p>

Testoil-ISO 4113

L16

En

L16

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 a 5

2. Edition

En

VA 4/100 H 1050 BR 12-4 Nozzle-and-holder assembly  
0 460 304 104 1 688 901 020 (172 + 3 bar)

supersedes 5.77  
company IHC  
engine D 239 charger 125

Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,02(± 0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 16/4 B  
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	6,5-7,5 mm		
1.2 Supply pump pressure	700	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	71,5-72,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	15,0-21,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 85,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1130	28,0-36,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	250-400(220-430)	700	840-990
	mm	Start	(6,2-7,8)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	700	1050
	kp/cm <sup>2</sup>	1,4-1,9(1,2-2,1)	(4,6-5,5)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind. 25		55-125(40-140)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1160-1220 (1140-1240)	0	
		1130	(27,0-37,0)	
		1030	69,5-72,5 (68,5-73,5)	
		800	(71,0-73,0)	
		500	69,5-72,4 (68,5-73,5)	
	Stop	1050	0	
Idle stop	Full	370-430 (350-450)	0	
		350	(14,0-22,0)	
	Start	100	mind. 85,0	
		500	35,0-69,0 (34,0-70,0)	
End stop		mind. 150		

L17

L17

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump = <math>25 \pm 4^\circ</math>  <math>\alpha = 40 \pm 8^\circ</math>  <math>\beta = 30 - 8^\circ</math>  <math>\gamma = 60 \pm 8^\circ</math></p>	<p>Pump  Dimension IV = 1,5 mm  Dimension V = - mm  Dimension I = 7,0 mm  Dimension II = 14,0 mm  Dimension III = 35,8 mm</p>

Testoil-ISO 4113

L18

En

L1P

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 3,9 a

3. Edition

En

VA 4/100 H 1050 BR 12      0 460 304 048  
 BR 12 - 3      0 460 304 049  
 BR 12 - 7      0 460 304 142

supersedes      5.77  
 company      IHC  
 engine      XDD 239

Nozzle-and-holder assembly 1 688 901 020 (172+3 bar)

Setting of the pointer at a stroke of 1 mm in  
 relation to outlet "A".

Pre-stroke setting      0,5 mm

All test specifications are valid for  
 Bosch Fuel Injection Pump Test Benches  
 and Testers  
 Test Instructions and Test Equipment  
 VDT-WPP 161/4 B  
 Pre-setting see reverse side

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	600	8,1-9,1 mm		
1.2 Supply pump pressure	600	4,5-5,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	64,0-65,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	250	17,5-23,5 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start      196 bar	100	mind. 85 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1100	41,0-49,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	150-300(120-330)	600	830-980
	mm	Start	(7,8-9,4)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	600	1050
	kp/cm <sup>2</sup>	1,6-2,1(1,4-2,3)	4,2-5,2)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500		1000
	cm <sup>3</sup> /10 s	mind. 25		55-125(40-140)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1110-1160° (1090-1180)	0	
		1100	(40,0-50,0)	
		1030	66,0-69,0 (65,0-70,0)	
		800	(63,5-65,5)	
		500	57,0-60,0 (56,0-61,0)	
	Stop	1050	0	
Idle stop	Full	310-360 (290-380)	0	
		250	(16,5-24,5)	
		100		
End stop	Start	mind. 150	mind. 85	

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 40 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 0,5 mm</p> <p>Dimension V = - mm</p> <p>Dimension I = 7,0 mm</p> <p>Dimension II = 14,0 mm</p> <p>Dimension III = 35,8 mm</p>

Testoil-ISO 4113

# Test Specifications

## Distributor-Type

### Fuel Injection Pump

46

WPP 001/4 IHC 5,8 b

3. Edition

En

VA 6/100 H 1100 BR 36  
0 460 306 038

supersedes 6.67  
company IHC  
engine D 358

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

Pre-stroke setting 0,3 mm  
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	5,3-6,3 mm		
1.2 Supply pump pressure	700	5,4-5,9 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure Full-load delivery with charge-air pressure	800 --	70,0-71,0 cm <sup>3</sup> /1000 strokes -- cm <sup>3</sup> /1000 strokes		2,5
1.4 Idle speed regulation	250	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1200	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

2.1 Timing device	rev/min mm	Checking values in brackets		940-1100
		350-500(320-530)	700	
	Start	(5,0-6,6)	9,7-10,4(9,4-10,7)	
	100	700	1100	
2.2 Supply pump	rev/min kp/cm <sup>2</sup>	1,1-1,6(0,9-1,8)	(5,2-6,1)	6,9-7,4(6,7-7,6)
		500	1000	
Overflow delivery	rev/min cm <sup>3</sup> /10 s	mind. 25	55-125(40-140)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1270-1320 (1250-1340) 1250 1080 800 500	0 71,0-74,0 65,0-68,0	(25,0-35,0) (70,0-75,0) (69,5-71,5) (64,0-69,0)
	Stop	1100	0	
Idle stop	Full	370-450 (350-470) 250	0 (16,0-24,0)	
--	Start	100 500	mind. 90,0 max. 55,0	
End stop		mind. 150		

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Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p><math>\alpha = 25 \pm 4^\circ</math></p> <p><math>\beta = 30 \pm 8^\circ</math></p> <p><math>\gamma = 30 - 8^\circ</math></p> <p><math>\delta = 60 \pm 8^\circ</math></p>	<p>Pump</p> <p>Dimension IV = 4,0 mm</p> <p>Dimension V = - mm</p>

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